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F. Y. Glartelius

# SWEDISH MOVEMENTS

## MEDICAL GYMNASTICS

BY DR. P. A. HEDQVIST

PROFESSOR OF PHYSIOLOGY AND MEDICAL GYMNASTICS, UNIVERSITY OF UPPSALA, SWEDEN

Translated by J. A. HEDQVIST

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# SWEDISH MOVEMENTS

OR

## MEDICAL GYMNASTICS

BY DR. T. J. HARTELIUS

Knight of the North Star Order, Knight of St. Olaf's Order, Director  
of the Central Gymnastic Institute of Stockholm, Sweden

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TRANSLATED BY A. B. OLSEN, M. D.

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WITH INTRODUCTION AND NOTES

BY J. H. KELLOGG, M. D.

Life Member of the British Gynæcological Society, Member of the American  
Medical Association, Superintendent of the Battle Creek  
(Mich.) Sanitarium and Hospital, etc.



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F. H. Kellogg, M. D.

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## EDITOR'S PREFACE TO THE AMERICAN EDITION.

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ALTHOUGH known in this country for thirty years or more, the practice of Swedish movements has, until very recently, been confined to scarcely more than half a dozen individuals, excluding, of course, those who, although attempting to practice the Swedish system, have had so slight a knowledge of the subject that they cannot properly be said to have employed it. Within the last few years, however, the knowledge of the many cures effected by this system in cases otherwise deemed incurable, and especially the growth of interest in the physiological mode of treatment of disease, has created a widespread demand for a better knowledge respecting this system of medical gymnastics, which, though so little used in this and most other countries, has been very extensively employed in Sweden, the place of its origin, for more than three quarters of a century. It is for the purpose of meeting this demand for information in relation to one of the most effective of therapeutic agencies, that this translation has been prepared. A few fragmentary works have previously appeared, but up to the present there has been no English publication upon this subject which could be regarded as authoritative.

Before speaking further of the work itself, it may be of interest to those of our readers to whom this subject is new, to glance briefly over the history of gymnastics as applied for medical purposes. The very earliest of medical treatises refer to exercise as a therapeutic means. The early Greeks and Romans, as well as the earlier Egyptians, made a more or less systematic use of gymnastics in the treatment of disease. The Chinese and other nations whose history reaches back into prehistoric times, were found, when first discovered by Europeans, in possession of a highly elaborated system of gymnastics, which was employed both for military training and for medical purposes. The writer has in his possession an

ancient treatise on gymnastics in Chinese, for which he is indebted to Hon. John Fryer, Shanghai, the translator for the Chinese government. The work is profusely illustrated, and from its date was published, according to the best Chinese authorities, early in the Christian era. It gives as authority for the information which it contains, however, a still more ancient work which has long since disappeared. Some attempt has been made to discredit the claim made by the great Swedish gymnast, Pehr Henrik Ling, as the originator of a system of gymnastics ; but all fair-minded persons who have given the subject sufficient study, consider him justly entitled to the reputation which he enjoys among his countrymen. The great credit due to Ling does not arise so much from the fact that he originated *de novo* all the movements which the system includes, as that he organized and reduced to a systematic and rational system a mass of knowledge which, previous to his time, had been fragmentary and empirical. He did still more than this — he originated many new movements and new combinations of movements.

The eminent Swede whose name we have already mentioned, was born Nov. 15, 1766, at Smaland. He was early left an orphan, but his great natural energy led him to improve every opportunity for gaining knowledge and culture. Like his father, who was a clergyman, Ling studied theology. After graduation, however, he entered the Danish navy and fought against the distinguished British naval commander, Nelson, in 1801. Later, he took up gymnastics, of which he became a teacher in 1805. He was about forty years of age when he seriously undertook the labors which resulted in a development of his system of curative movements, which he began to practice in 1813, laboring against great difficulties and surmounting many obstacles. Persevering under the most discouraging circumstances, he finally, in 1834, at the advanced age of sixty-eight years, saw the triumph of his work, receiving from the king the title of Professor, and Knight of the order of the North Star, his work at the same time receiving a great increase of support from the government treasury. For twenty years before this, the work had been recognized by the government, although very scantily supported by it. Ling at first met great opposition from the medical profession, but before his death, which occurred



in 1839, he had the satisfaction of seeing his system accepted by the profession of his country, and by distinguished scientific physicians in other countries, and a large Central Institute established at Stockholm, in which his system was taught by an able corps of professors. His biographer says of him that he was a pious, sincere, conscientious man, one who was loved for his virtues as well as for his scientific attainments.

The work of Ling, as head of the Central Institute of Stockholm, was, at his death, taken up by Professor Banting, one of his former patients and pupils.

Professor Hartelius, the author of this work, became assistant teacher in the Central Institute thirteen years later, and two years subsequently established in Stockholm a Gymnastic Institute for both sick and well. In 1865, Dr. Hartelius, at the age of forty-seven, became superintendent of instruction at the Central Institute, a position which he held for nearly twenty-five years, having only recently resigned.

Under the able superintendency of Dr. Hartelius, the system of gymnastics taught at the Central Institute, and which bears the name of Ling, has received many important additions, and has been improved in many particulars through his painstaking, persevering labors and his great scientific learning. To him, perhaps, more than to any one else, are due the advantages which women have enjoyed during his service as superintendent, for receiving instruction in the art of medical gymnastics. Dr. Hartelius has been an indefatigable worker. When the writer had the pleasure of meeting him twelve years ago, he found him hard at work at Ramlösa, a health resort situated on the beautiful strait between Helsingborg and Helsingor, and it was through his courtesy at that time that I enjoyed the privilege of making a practical study of Swedish medical gymnastics under the greatest living master of the art. Although nearly seventy years of age, I found Dr. Hartelius as vigorous and active as a youth, and laboring arduously with his patients many hours a day, beginning at six o'clock in the morning, and administering the treatment with his own hands.

Dr. Hartelius has been the author of many important works in addition to the one of which this is a translation, and which is his principal work. Among these may be mentioned, "Emphysema,

Its Treatment, etc.;" "Physiological Lectures Given at the Gymnastic Central Institute;" "Lectures Concerning the Dwellings of Laborers;" "Anatomy of the Human Body," three editions, 110 illustrations; "Text-book in Histology and Physiology," second edition, 70 illustrations; "Gymnastics for the Home," three editions; "The History of Gymnastics," also several poetic works. Several of these works have been translated into the Finnish, German, English, and other languages.

The valuable services of Prof. Hartelius in connection with the Central Institute at Stockholm, and in the development of the system of Swedish gymnastics, have secured for him many marks of recognition from the king of Sweden, by whose appointment he has served on several royal commissions, and by whom he has been twice knighted.

In offering this translation to the American public, it is believed that an important step is taken in the advancement of Swedish gymnastics as a curative means in this country. The work of Dr. Hartelius has long been employed as the standard text-book in Sweden, and is the authority upon which the various smaller publications which have heretofore appeared in English, draw for their information.

Having made extensive use of Swedish movements, as well as other forms of gymnastics, in the treatment of the sick during nearly twenty years of practice, the writer has taken the liberty, in editing the English translation of this work, to add a few notes by way of indicating the limitations of movements as curative means for the purpose of disabusing the reader's mind of the erroneous impression which might otherwise arise, that Swedish movements are to be regarded as a panacea for all human ills. There are many diseases which may be cured by the exclusive application of this excellent system, but in most cases the best and most speedy results will be obtained by a combination of Swedish movements with hydrotherapy, scientific regulation of the dietary, and the various other resources of our modern rational therapeutics.

A special feature of Swedish movements, commonly termed massage, has received great attention and development in recent times, and is now universally recognized as an important curative means. This subject is considered so briefly by Dr. Hartelius that

the editor has undertaken to present it in as full and accurate a manner as possible in another volume.<sup>1</sup>

At the suggestion of the translator, a few new figures have been added to the work and some old ones improved.

In the employment of Swedish gymnastics it should be remembered that muscular movements are a powerful means of affecting physiological processes, and that when gymnastics are used therapeutically, they must be employed with the same accuracy and precision with which the physician regulates the doses of medicinal agents. Harm as well as good can be effected by the powerful physiological impressions made by the various procedures included under the head of Swedish movements, hence it is of the greatest importance that those who undertake to apply Swedish gymnastics curatively, should not only first become perfectly familiar with the technique of the methods, but should exercise the greatest care in adapting prescriptions to the individual needs of patients.

The translation of this work was confided to the hands of A. B. Olsen, B. S., M. D., whose familiarity with the language, combined with a practical knowledge of the subject, gave him a special fitness for the task.

<sup>1</sup>"The Art of Massage; its Physiological Effects and Therapeutic Applications," by J. H. Kellogg, M. D.

# AUTHORIZATION OF PUBLICATION.

BY DR. HARTELIUS.

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THE proof-sheets of this translation were submitted to Dr. Hartelius, with whose concurrence the book is published, and elicited from him the following letter : —

GRIMSTORPS GÅRD, SANDHEM, Oct. 30, 1894.

*J. H. Kellogg, M. D.,*

*Battle Creek, Mich.*

Having considered and read the proof-sheets of the translation, edited by you and translated by A. B. Olsen, M. D., of my “*Lärobok i Sjukgymnastik*,” written in Swedish, I hereby declare that I find the translation correct, that it agrees with the original, and also that the abridgments and additions presented in the translation are fully justified. Consequently the English “*Swedish Movements or Medical Gymnastics*” in the English language, correctly interprets my treatise, which, written in the Swedish language, is founded upon the principles of Ling’s system, and upon the experience gained in Sweden in the treatment of the sick by gymnastics.

Finally, I wish you success in your endeavor to extend the knowledge of the Swedish method of preventing and correcting deformities and disease by movements or gymnastics.

T. J. HARTELIUS, M. D.,

*Knight of the North Star Order,  
Knight of St. Olaf’s Order.*

## TRANSLATOR'S NOTE.

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THAT Dr. Hartelius is the leading authority on Swedish movements is generally recognized. His "*Lärobok i Sjukgymnastik*," although brief and terse, is a complete manual of the subject. It consists of two parts, the first describing the positions and movements, the second dealing with disease and its treatment by Swedish movements. The descriptive part has been translated in full, but of the second part only the necessary introductory remarks and prescriptions have been translated. It was thought unnecessary to enter into the details of symptomatology, diagnosis, and prognosis in the English edition.

In making the translation, the Swedish text has at all times been closely followed, sometimes even at the risk of the English idiom.

In most cases the names of the positions and movements are literal translations, since the reasons for using them in the Swedish language hold good in English. When synonyms occur, they are explained when the position or movement is first described.

Generally the treatment of one side only of the body is described, but unless otherwise indicated, both sides are to be treated successively.

The figures are accurate, and will be found invaluable as aids to the text in giving correct ideas of many of the positions and movements.

In conclusion, I desire to thank the editor, J. H. Kellogg, M. D., for many valuable suggestions and for helpful criticism.

A. B. OLSEN.

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# SWEDISH MOVEMENTS

Or Medical Gymnastics.

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## PART I.

---

### DESCRIPTION OF MOVEMENTS.

MOTION, as illustrated by a moving object, partakes of the character of the force controlling the motion. The different degrees of strength of the organs of motion in various animals, and their form, determine the diversity of their movements.

The swimming of fishes, the flight of birds, and the walk of animals, presuppose a difference in their organs of motion. So also the nature of the gymnastic movements of the organs of motion in man is governed by similar laws.

In regard to the organs of motion we have to consider the principles of gravitation, and muscular power.

### LEVERS.

A rigid bar supported at some point of its length by a prop, is called a lever.

In motion, the bones of the human body serve as levers. The distance between the prop, or fulcrum, and the power, is called the power-arm; and the distance between the fulcrum and the weight, is called the weight-arm. If the products of these forces, multiplied by the length of the power-arm and the weight-arm respectively, are equal, there is a balance between the power and the weight. It is evident that the advantage of the power increases with the length of the power-arm, and diminishes in proportion to the decrease of the length. Thus a comparatively insignificant weight may become quite heavy to lift with the extended arm, since the weight-arm is long in com-

parison to the power-arm. The muscle attachments of the extremities are generally not far from the fulcra, a condition which indicates that these bones are not so much levers for strength as for velocity. An example will make this clear. If the arm is raised from the side to a horizontal position, the distance traversed by the hand is considerable compared with the distance traversed by that part of the arm which gives attachment to the deltoid muscle. The movement at both points takes place in the same time. Thus what is gained by velocity is lost in intensity, and *vice versa*. The capacity of the extremities for quick movements is easily seen. In the trunk the arrangement of the levers is generally more suitable for power and stability than for velocity. The trunk also acts something like a center for the movable extremities.

As levers, the bones have for their fulcra, the joints; therefore the extent of movements depends on the shape of these surfaces, as well as on the nature of the ligaments. The majority of the voluntary movements of man are angular movements. Angular movements are considered with regard to a particular axis, about which the movement occurs. From this arise the differences of the various joints: 1. Hinge-joints (*ginglymi*), in which the movement is limited to rotation, the joint being formed by a pivot-like process turning within a ring or the ring on the pivot, for example, the superior radioulnar articulation; or in which the articular surfaces are molded to each other in such a manner as to permit motion only in two directions,—forward and backward,—as the joints between the phalanges, and between the upper and forearm; 2. Pivot-joints (saddle-joints), such as the joint between the breast-bone and the clavicle; 3. Ball-and-socket joints (free-joints), where the angular movements can take place in any direction, as the shoulder-joint, hip-joint, etc., all these joints being intended for angular movements; 4. Those without a distinct axis, where the motion is almost imperceptible, as in sutures (bones of the skull).

### GRAVITATION.

In stooping or leaning forward, the influence of gravitation is apparent, even in the standing position.

The walk is aided by a suitable leaning forward. For example, if the arm is to be raised to a horizontal position, the muscular power must overcome gravitation. If the arm in the horizontal position is not supported by muscular strength, gravitation will immediately draw it down. In bending the trunk forward, the ventral muscles have to overcome stability, or accomplish the first movement, after which gravitation works. The dorsal muscles counteract gravitation and check the movement, while on the other hand the abdominal muscles aid gravitation. Thus it is clearly seen that gravitation works both in opposition to and in co-operation with the muscles.

The action of gravitation is changed by various postures which may serve to lighten muscular exertion. In the ordinary sitting position, gravitation maintains that position, so that we cannot rise ; but if the feet are moved backward and the trunk leaned forward, the center of gravitation is changed so that the act of rising is facilitated.

The center of gravity of the body is generally found in the second lumbar vertebra, but it changes according to different postures. Thus, it is moved forward by stretching the arms forward, by the lifting of one leg, by bending forward the trunk, or by weights carried on the abdomen. By stretching one of the arms to the side or by bending sideways, the center of gravity is moved to that side. Bending the trunk backward moves it backward. Knee-bending or arm-upward-stretching, moves it upward. By bending forward to a great degree, it is moved downward.

### MUSCULAR POWER.

A muscle can be shortened even to half its length by contraction, and thus thickened until its length and breadth are almost equal. However, the contraction does not take place

to such a high degree, for it is prevented by the nature of the joint and the antagonistic muscles.

Muscular power exerts itself as a pulling or pushing force, hence, in reference to gymnastics, it is important to remember that the power is greatest within a certain limit of contraction, and beyond this it diminishes. If the muscle were attached at right angles to its lever, the force of the muscular power would be greater, but the shape of the body and the position of its parts generally prevent this. The insertions of the muscles generally form, with the levers, very acute angles. Still the muscular tendons often lie on greater or less eminences immediately at their insertions, by which means the angles are enlarged.

#### PHYSIOLOGICAL DIVISION OF MOVEMENTS.

1. VOLUNTARY MOVEMENTS are those produced at the dictation of the will, the impulse being sent through the nerves at a speed of ninety feet per second. These movements occur for a definite purpose, obeying the will with a greater or less degree of promptness.

2. INVOLUNTARY MOVEMENTS are those occurring without the dictation of the will, as those of the heart, stomach, intestines, etc.

Among involuntary movements several kinds may be mentioned :—

*a. Associate or Co-incident Movements*, which in gymnastics are often found abnormal, and can be caused to disappear. One may often notice, especially in a novice, not only superfluous but also, many times, unreasonable movements accompanying both casual and intended movements. This is particularly noticeable in the fingers, toes, and face. In like, or symmetrical, parts, one part follows the motions of the other; for example, it is easier to wink with both eyes than with one at a time; and one hand often follows the motions of the other. Co-incident movements are also necessary for certain compound performances, such as chewing, swallowing, and

peristaltic motions. They have then been called *co-ordinate movements*. Our most common movements may be combined without special dictation of the will, as walking, and exertion of the mind.

*b. Reflex Movements* are another kind of involuntary movements, which follow consciously or unconsciously the irritation of the sensory nerves. Thus sneezing and coughing are caused by irritation of the sensory nerves of the mucous membrane of the nose and lungs; bright sunlight causes winking; irritation of the root of the tongue and pharynx causes vomiting; a blow upon the hand or foot calls forth a hasty movement of the part struck, etc.

*c. Imitative Movements*.—Looking at cramp movements, epilepsy, etc., often calls forth slight, cramp-like twitchings, especially in children and nervous persons. Yawning is a well-known imitative movement.

*d. Emotional Movements*.—Fear, anger, anxiety, etc., sometimes call forth involuntary movements.

*e. Rhythmic Movements*.—The involuntary movements of the heart and lungs are called rhythmic, because of their being separated by certain intervals of time. The movements of the stomach and intestines and those of walking are, to a certain degree, rhythmic.

#### GYMNASTIC CLASSIFICATION OF MOVEMENTS.

1. *ACTIVE MOVEMENTS*.—If a movement is made through the direction of the will and by one's own efforts, it is called *active*.

Active movements can take place either without outward support, when they are called *free movements*, as in free-standing gymnastics; or with support furnished by gymnastic apparatus or personal assistance, when they are called *restricted or supported movements*.

Restricted movements executed by the aid of one or more persons, have received various names. If the patient performs the movement under resistance of one or more persons, it has



been called *active-passive* (Rothstein) and *duplicate-concentric* (Neumann). In this movement the origin and the insertion of the muscle approach each other. If the movement is done by one or more attendants under resistance of the patient, it has been called *passive-active* (Rothstein) and *duplicate-eccentric* (Neumann). Here the origin and the insertion of the muscle separate from each other.

The difference between the concentric and the eccentric movements, makes itself evident in many ways; for example, it is more difficult to climb a rope than to descend; for in the first place, the muscular power has to overcome the weight of the body plus the friction of the arm joints; while in the latter, only the weight of the body has to be overcome, as the friction is subtracted. For the same reason it is harder to lift weights than to lower them. Nevertheless the condition is different when the movement is performed by the alternate action of the patient and the attendant, so far as the patient uses the same muscular strength in both concentric and eccentric movements. This is possible by the assistance of qualified attendants. Taken with this consideration, there is no real difference between the two methods.

The free active movements, taken with judgment, are especially suitable for healthy young persons, for these movements assist greatly to develop and strengthen the organs of the body.

Movements which are done by the aid or support of one or more persons, can be adapted as to time and severity, according to the condition of the individual, and suited to special parts of the body. For these reasons they are much used in medical gymnastics, and it is really by means of these movements that medical gymnastics have won their importance.

*The Effect of Active Movements.*—The active movements cause an increased metabolism of the tissues of the body. They augment arterial blood pressure, and increase the passage of fluids from the capillaries to the lymphatics. They also increase the blood circulation in the veins, and hasten diffusion between the lymph vessels and the vein capillaries.

Nutritive material is given up by the blood to the lymphatics, and from these, waste matters are absorbed by the blood and carried off through the lungs, skin, kidneys, and intestines. In order to designate different active movements, we use several names; as, restorative, developing, strengthening, derivative, etc. More generally considered, the effects of active movements are restorative, hastening tissue changes.

2. PASSIVE MOVEMENTS.—A movement performed with one of the organs of motion, or some part of the patient's body, by a force outside of the patient, is called *passive*.

*Effects of Passive Movements.*—It has long been known by gymnasts that passive movements increase absorption from the tissues. This is in harmony with recent experiments, which show that movements of the body increase the circulation of lymph in the lymphatics. Passive movements have also been called *resorbing movements*. Nevertheless, it is evident that passive as well as active movements have, according to their different forms, different effects, all of which are explained in the description of the various movements. The effects of passive movements give rise to several expressions; as, reflexive, enlivening, strengthening, derivative, soothing, and resorbent.

#### GYMNASTIC APPARATUS.

The gymnastic apparatus, intended in these movements to take the place of an attendant, are, as to number, form, and construction, very different from those necessary in manual gymnastics. Hence these latter, which serve as passive support in the performance of movements, are few and simple. The most common are high and low cots, stools, hanging ropes, bars, ladders, heaving planks, and turning-poles, or something similar. Manual gymnastics can be carried on in the home without gymnastic apparatus, except such as is afforded by furniture, as sofas, chairs, etc. The principal requirement of manual gymnastics is a living, intelligent attendant. This attendant should be prudent and well-trained, one who is either himself capable of prescribing and directing the movements



suitable for the various diseases, or who at least understands perfectly the giving of the movements.

#### MODE OF WRITING AND NAMING THE MOVEMENTS.

The initial position is named and written first, and afterward the movement itself ; for example, stretch-standing, side-bending. Here the initial position is stretch-standing, and the movement is side-bending. In the same way we write stretch-sitting, arm-bending, or stride-standing, knee-bending.

The compound initial position is named before the primary position ; for example, " stretch " denotes the compound, and " standing " the primary position.

The names used for the movements have the inconvenience of being long and intricate, especially so before one becomes acquainted with them ; but thus far a simple and also distinct nomenclature has not been found.

If the patient stands or rests upon a support higher or lower than that of the attendant, then, in consequence of this, " high " is added in the first case, and " low " in the second.

In each movement the initial position must not be less carefully regarded than the movement itself. Hence the teaching of these movements has to describe, partly the initial positions, and partly the movements.

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#### INITIAL POSITIONS OF THE MOVEMENTS.

The idea of gymnastics is taken from the positions and movements of every-day life : one may stand, sit, lie, or assume any of the modifications of these positions.

The same movement may occur in many different positions, which give the treatment its different effects. Among the various positions are some which serve as the foundation of others. Hence the former are called primary, or principal positions, and the latter, compound positions.



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.

PLATE I.



Fig. 9.



Fig. 10.



Fig. 11.



Fig. 12.



Fig. 13.



Fig. 14.

## I.—PRIMARY POSITIONS.

The natural primary positions — standing, sitting, and lying — are used, and each has a special significance with man ; no animal stands, sits, or lies as man does. To these primary positions two others have been added ; namely, knee-standing and hanging ; so we have in all, five primary positions.

*1.—Standing, Primary Position.*

In the standing primary position, the legs, trunk, and head are upright, the feet, with the heels together, form nearly a right angle with each other. The arms hang at the side ; the position should not be strained. Fig. 1.

In consequence of the natural curves of the spine and the angle of the pelvis, the line of gravity, while not falling exactly at the center of the body, does fall within its limits.

The line of gravity of the head falls in front of the joint of the skull and the atlas ; therefore the head must be held upright by the neck muscles,—it falls forward when one sleeps in the sitting position. The common center of gravity for the head and trunk lies just forward of the tenth dorsal vertebra ; hence the line of gravity in the upright position falls back of the hip-joints. Without an opposing force, the trunk would fall backward ; this opposing force is found partly in a strong band (lig. ileo-femoral), which is situated in front of the joint, partly in the wide fascia of the thigh and partly in the muscles.

The common center of gravity of the head, trunk, and thighs lies a little farther down than the tenth dorsal vertebra, but scarcely farther forward, so that the line of gravity falls back of the knee-joints in the standing position, and hence the body would fall backward unless the knee-joints were kept stiff.

The center of gravity for the entire body is found in the second lumbar vertebra ; hence the line of gravity in the standing position will fall forward of the ankle-joints, and therefore

the body tends to fall forward. This is prevented principally by the tension of certain muscles.

The foot forms an arch, on the highest point of which the weight of the body rests in standing. The foot receives support at three points ; the heel, and the distal ends of the first and fifth metatarsal bones. Thus the equilibrium in the upright position is maintained by the force of gravity, aided by ligaments and muscles.

The standing position indicates strength, courage, and determination. The animal walks with its head turned to the ground ; but man in his upright position expresses his determination to dominate on earth, and with his thoughts to step beyond its bounds. The position is an emblem of that which is noble and elevated. It is the true position for pedagogic gymnastics, for the carrying of arms, for æsthetic gymnastics, and for a large number of movements in medical gymnastics. Moreover it is frequently the principal position in ordinary labor movements.

### 2. — *Knee-Standing, Primary Position.*

In this position the knees and forward part of the legs, rest on a cot, mattress, or the like, the feet lying outside of the support. Here the weight of the body mainly rests on the knees, the inner parts of the lower legs, and the feet, closed upon each other. On the whole, the body, as in standing, has a free perpendicular position.

Here the line of gravity is somewhat shortened ; hence the position ought to be less tiresome than standing ; but the rare use of the position makes it, when continued long, disagreeable and fatiguing. Knee-standing is really only a modification of the standing position, but it is the basis of several compound positions in medical gymnastics, and is hence considered as a principal position. Fig. 2.

### 3. — *Sitting, Primary Position.*

A sitting position is taken on a cot, stool, or the like, so that the seat and the proximal part of the thigh rest on the sup-

port. The lower legs are together and form a right angle with the thighs, likewise the feet and heels are at right angles to the lower legs. The trunk and the head are in a perpendicular position and thus at right angles to the thighs; the arms hang at the sides.

In this position the line of gravity is considerably shortened, hence the position is not fatiguing. If it can be said that the standing position is tiring, and the lying position conducive to sleep, then the sitting position is suitable for brain work.

It is, as a primary position, the foundation for many compound positions in medical gymnastics, because the effects of the movements themselves can be more concentrated on particular parts of the body, since the principal position is resting, although the compound may be straining. Fig. 3.

#### *4.—Lying, Primary Position.*

In the lying position, the dorsal parts of the head, back, and legs rest on a plane surface, such as a cot, sofa, or the like.

The position is resting, and has a soothing effect upon the rhythmic movements of the organs, such as those of the heart and lungs. It also has a soothing effect upon the brain. The position is in a certain degree conducive to sleep, and therefore not suitable for either mental or physical labor. It is the basis for several compound positions, and is very suitable for treatment of weak patients. Fig. 4.

#### *5.—Hanging, Primary Position.*

The hands, separated by the breadth of the shoulders, grasp a bar or other convenient apparatus, which is so high above the floor that the feet do not touch the same, the arms and body, as a whole, being in a strained position. Although only the flexors of the fingers are contracted, the position is very tiring. Through considerable straining, especially in the thoracic region, it has a restraining effect upon respiration and the circulation of the blood, of which the hastily formed

dark red color in the face bears witness. The positions compounded from the hanging position are not numerous, and of these but few are useful in medical gymnastics. Fig. 5.

## II.—COMPOUND POSITIONS.

The compound positions are many, and could be increased indefinitely in number; but here we shall only consider those which have the most practical use. The terms here used are those originated and employed by the Central Institute of Gynmnastics, Stockholm, Sweden. No particular rule is strenuously followed in this terminology, but each term is descriptive and significant, and hence practical.

### COMPOUND POSITIONS WITH THE STANDING PRIMARY POSITION.

#### *a.—With the Lower Extremities.*

1. *Close-standing*.—The inner borders of the feet touch each other from the heels to the toes. The change from this to the principal position, and *vice versa*, is accomplished by lifting and moving the toes from the one to the other position. The rest of the body remains perpendicular, as in the principal position. Fig. 6.

2. *Toe-standing*.—The insteps are stretched and the heels raised without being separated from each other, by which the body receives a gentle thrust forward. The weight of the body rests upon the distal ends of the first and fifth metatarsal bones, as well as the ends of the toes. Fig. 7.

3. *Knee-bend-standing*.—The flexure is in the hip, knee, and ankle joints. It may be slight or deep, but normally it is considered as limited by a right angle between the thigh and the leg. The knees are bent outward so that they are in the same plane with the feet. The trunk and head are carried perpendicularly; the arms hang at the sides. Fig. 8.

The term “squat-standing” or “deep knee-bend-standing” is also used for this position.



4. *Knee-bend-toe-standing*.—This position is identical with the last, with the exception of the feet, which have the toe-standing position. Fig. 9.

5. *Walk-standing*.—Either foot is moved outward in the original direction, two foot-lengths, the weight of the body being equally distributed to both legs. Fig. 10.

(If the right or left leg is particularly referred to in this or other compound positions, it is denoted by *right* or *left*, as right-walk-standing.)

6. *Kick-standing*.—One leg is moved forward and raised in a stretched position, so that the heel is about a foot's high from the floor; while the other foot, as well as the trunk and head, remains perpendicular, the arms hanging at the sides. Fig. 17 gives an illustration of the position, if one imagines that the leg raised forward is unsupported.

7. *Stride-standing*.—Either foot is moved two foot-lengths sideways, the weight of the body being equally distributed to both legs, the principal position remaining otherwise the same. Fig. 11.

8. *Stride-knee-bend-standing* is a combination of stride and knee-bend-standing, and requires no special explanation.

9. *Stride-knee-bend-toe-standing* is a combination of stride and knee-bend-toe-standing.

10. *Walk-knee-bend-standing* is a combination of walk and knee-bend-standing, but little of the weight of the body in this position rests upon the forward leg. Fig. 12.

11. *Balance-standing*.—One foot rests upon a slight elevation, the other hanging free. Fig. 13. This position is quite difficult, and hence the gymnast generally holds the patient by one or both hands.

12. *Half-crook-standing*.—One leg is lifted in a bent position so that right angles are formed in the hip and knee joints. Here the balance is maintained by the remaining leg, by which the trunk and head are held perpendicular, the arms hanging down. This position has also been named "jump-standing."



13. *Half-stretch-fall-out-standing*.—One foot is moved forward three foot-lengths, by which the knee of the forward leg is bent so that it comes in a perpendicular line with the toes of the same foot. The body leans forward over the forward leg and is supported by it. The other leg is stretched, and forms a right line with the back of the trunk and head, and an acute angle with the floor. The arm corresponding to the forward leg is upward, and the other downward stretched. Fig. 14.

14. *Step-standing*.—One foot is placed upon a suitable elevation, so that a right angle is formed at the knee-joint. Fig. 15.

The name of this position is changed to “side-step-standing” when the trunk is turned in the same direction as the step-standing foot.

15. *Instep-support-standing*.—One leg is carried backward and placed so that the instep rests upon a suitable apparatus. Fig. 16. If the supported leg is stretched backward, the position is denoted “swing-standing.”

16. *Heel-support-standing*.—One leg is raised forward and the heel supported by a suitable elevation. Fig. 17.

Toe-standing in itself is a movement which severely strains the muscles, because of the difficult maintenance of equilibrium, on account of the slight support. All the compound positions, in which the balance is more or less difficult to maintain, are, in consequence thereof, fatiguing; such as balance-standing, kick-standing, and jump-standing.

Walk-standing is a position which, with certain movements, conduces to various beneficial effects upon both the groin and contingent parts.

Stride-standing is a stable position, and confines the pelvis, so that the effects of the movements are more definite. Half-stretch-fall-out-standing is quite a severe position, which requires considerable muscular exertion. Step-standing causes a relaxation of the muscles on the side opposite the step-standing foot.



Fig. 15.



Fig. 16.



Fig. 17.



Fig. 18.

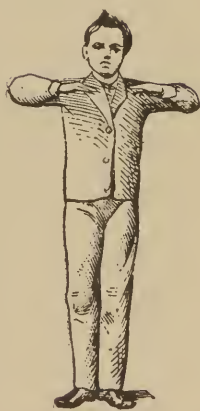


Fig. 19.

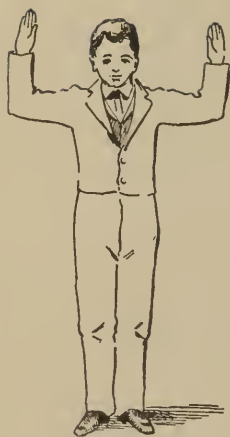


Fig. 20.



Fig. 21.



Fig. 22.



Fig. 23.



Fig. 24.



Fig. 25.

Heel-standing and instep-standing conduce to a special and definite effect upon the legs, pelvis, and trunk.

*b.—With the Upper Extremities.*

The arms in their compound positions are either flexed or stretched in a horizontal or perpendicular direction.

1. *Bend-standing*.—In this position the upper arms retain their usual perpendicular downward position, close to the sides, while the forearms, on the contrary, are bent upward toward the upper arm, with the palms facing the shoulder. The shoulders are drawn well back, and the forearms turned outward, keeping the palms facing the shoulders. Fig. 18.

2. *Inward-bend-standing*.—The upper arms are in a horizontal position outward on the same level and line with the shoulders. The forearms at the same height are bent inward to an acute angle; the palms of the hands are turned down. This position is also named “swim-standing.” Fig. 19.

3. *Heave-standing*.—The upper arms are horizontally stretched outward at the same height and in line with the shoulders, the forearms are bent upward in a perpendicular position, making a right angle with the upper arms. Fig. 20.

If the forearms are directed forward on the same level as the upper arms, with otherwise the same position as above, the position is known as “flying-standing.”

4. *Talk-standing*.—The hands are turned outward so that the palms face forward, by which the hands are removed somewhat from the thighs. Fig. 21.

5. *Stretch-standing*.—The arms are stretched in a perpendicular direction upward, the palms facing each other. Fig. 22.

6. *Reach-standing*.—The arms are stretched forward horizontally and parallel, the palms facing each other. Fig. 23.

7. *Fan-standing*.\*—The arms are stretched outward from the sides, in height and line with the shoulders, the palms facing

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\* These names of the different stretch positions of the arms are brief and significant, although the terms “upward-stretch-standing,” “forward-stretch-standing,” and “outward-stretch-standing” would have been more definite, though longer.

down. The arms may be supported either by the patient or by other persons, or apparatus. Also called "yard-standing."

8. *Wing-standing*.—Each hand grasps the corresponding hip, the four fingers in front and the thumb backward. The elbows are in the same plane with the shoulder-blades which are drawn well back. Also called "hips-firm-standing." Fig. 24.

9. *Think-standing*.—The palmar surface of the fingers is placed on the forehead, so that the finger ends touch each other, the elbows being held well back. Fig. 25. This position has also been named "forehead-firm-standing."

10. *Rest-standing*.—Both hands, with the fingers dovetailed together and the palms inward, are placed upon the back part of the neck, the elbows being thrown outward. Fig. 26. This has also been called "neck-firm-standing."

11. *Stretch-support-standing*.—The arms in a stretched position receive support by the hands' grasping a suitable object or the hands of another person. Fig. 22 gives an illustration of this, if one imagines the hands to grasp an apparatus or some person.

12. *Reach-support-standing*.—The arms are stretched forward, the hands at the height of the shoulders grasping an object or person. Fig. 27.

13. *Fan-support-standing*.—The arms in the fan-position receive support by the hands' grasping a suitable appliance. Fig. 28.

14. *Talk-support-standing*.—Here the hands are supported by an appliance, such as perpendicular poles.

15. *Heave-support-standing*.—The hands grasp a proper object or another person's hands. Fig. 20 illustrates the position, if one imagines the hands to grasp an apparatus or the hands of another person.

The various compound positions of the arms have different effects upon the organs of the chest. Stretch and fan-standing, think and rest-standing, together with stretch-support-standing, have an expanding effect upon the chest, by which deeper inspiration necessarily follows. Stretch-standing and



Fig. 26.



Fig. 27.

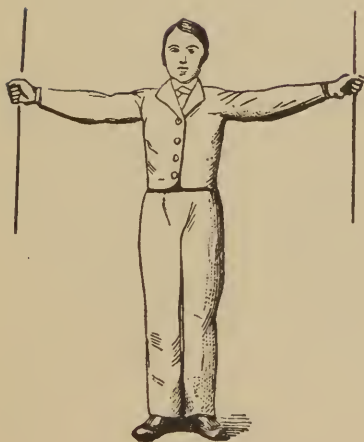


Fig. 28.



Fig. 29.



Fig. 30.



Fig. 31.



Fig. 32.



Fig. 33.



Fig. 34.



Fig. 35.



hang-standing have a powerful effect upon the middle and lower parts of the lungs; fan, think, and rest-standing, upon the upper parts. The importance of these compound positions is especially realized in connection with a flat or compressed chest.

Reach-standing compresses in a certain degree the forward and upper part of the chest, and has a depressing effect upon the breathing and blood circulation; hence it is not a fit position for those who have weak lungs or heart. On the contrary, as a compound position it is often suitable for *emphysema pulmonum*. Half-stretch-standing offers a proper position for twisting of the trunk, through which it is possible to produce an effect directly upon the chest and abdomen. Half-stretch-standing, or the two arms stretched in different directions, are used as initial positions in curvatures of the spine.

If but one arm at a time, but alternately, is to be stretched in any of the given directions, the word "half" is added; for example, half-stretch-standing. If only the right or left arm is to be used, "right" or "left" is added. In the same way, if the arms are to take different positions, it is indicated thus; right-stretch, left-fan-standing.

*c.—With the Trunk.*

In consequence of the fact that the spinal column is composed of separate vertebræ, with only a small degree of motion between them, the ordinary movements of these vertebræ are effected by either a curved bending or a screw-like twisting about its median line. It should be possible to bend either forward or backward, or to either side. The spinal column has natural curves,—two forward and two backward,—which, as well as the different degrees of motion between the cervical, dorsal, and lumbar vertebræ, prevent the forming of a uniform curve of the spine either forward or backward. Although no lateral curves of the spine are noticeable to the eye, the different degrees of lateral motion, though less than in the above case, tend to prevent a uniform side curvature. Taking



a bent position with the curve or convexity backward, is unnatural and has only exceptional use. On the other hand, a position with the curve forward is of great practical benefit; even side-bow-standing has its use. The former with the convexity forward is called "bow-standing."

1. *Bow-standing*.—The pelvis and abdomen are brought forward while the feet and head are immovable, so that the body takes a curved position, except the arms, which by their own weight fall downward or take the wing-position. Fig. 29.

If in taking this position the head and shoulders are brought backward as far as the equilibrium will allow, the position is named "fall-bow-standing." The head and shoulders can be brought back but little before the line of gravity falls back of the heels, and the balance is lost, so that the position does not deviate much from the former.

2. *Side-bow-standing*.—The pelvis is projected to one side, by which the body takes a bow-position to that side. The body maintains strictly the side plane. To which side the curve is to be made is indicated by "right" or "left." Fig. 30.

3. *Stoop-standing*.—The bending is in the hip-joints; the trunk and head are brought forward with otherwise an unchanged position; the legs are bent somewhat backward. This position is generally taken with the arms in the wing-position. Fig. 31.

4. *Stoop-bow-standing* is a combination of stoop and bow-standing. Fig. 32.

5. *Weight-stooping*.—The same as stoop-standing, but the upper part of the thighs is supported by a suitable apparatus, as a bar, or something similar. This position has also been named "weight-standing."

6. *Twist-standing*.—The twisting is between the bodies of the vertebræ about their median line,—to the right or left side as far as the natural condition will admit. The pelvis is not involved in the twisting. Fig. 33.

7. *Bow-twist-standing* constitutes a combination of bow and twist-standing.

8. *Stoop-twist-standing* is made up of a combination of stoop and twist-standing.

9. *Lax-stoop-standing*. — The head and trunk are bent deeply forward; the arms hang downward by their weight. Fig. 34.

If in any initial position any part of the body is to receive support in order to have more stability in the giving of the movements, such part is especially indicated.

In the standing position, the body without bending can only slightly be changed from perpendicularity before the line of gravity falls beyond the foot support, when the balance is lost, — to the sides and backward less than forward. Hence in order to maintain a considerable bending position in any direction, a support is demanded to the upper part of the body, and to the side at which the bend is made.

10. *Full-standing*. — The body is kept straight in a leaning position, the neck generally being the part supported. Fig. 35.

11. *Side-full-standing*. — That side of the head or that shoulder corresponding to the leaning side, receives the support. Fig. 36.

12. *Stoop-fall-reach-support-standing*. — The body falls forward, remaining straight, the hands grasp a ladder so that the arms, slightly bent, can give the necessary support. The proneness is so great that the position is almost horizontal. The toes form the support upon the floor. Fig. 37.

13. *Thigh-support-standing*. — The thighs rest against a bar or similar apparatus.

14. *Side-support-standing*. — Either side is supported by a bar. Both of these last-named positions are obvious without any special explanation.

15. *Stretch-support-bow-standing*. — The arms are stretched and the hands grasp a suitable apparatus, the trunk being in the bow position, as in the preceding.

16. *Stretch-support-side-bow-standing*. — The trunk is in side-bow position, the arms are stretched in a position intermediate

between fan and stretch-standing, the hands grasping the support one above the other.

In bow-standing the chest is expanded, by which the vessels and other organs of the chest and abdomen are operated upon. Hang-bow-standing has a like effect, but is more powerful. Thus these positions are suitable for sunken chest, obstructions, chronic stomach catarrh, and colic. Stoop-standing presses together the chest and abdomen, and hence is unsuitable for weak lungs, diseases of the heart, or obstruction. On the other hand, stoop-standing is fitted for passive movements, for tendency to diarrhœa, colic, chronic stomach catarrh, and excess of blood in the liver and spleen. Side-bow-standing is a suitable initial position for certain passive movements, such as clapping, hacking, or stroking, when they are to be given only to one side or to each side alternately. Weight-leaning is proper for movements of the spine. Twist-standing and twist-bow-standing operate upon the spinal cord and the nerves branching from it; and further upon the vessels lying in close proximity to the spinal cord, and also upon the greater and less vessels within the chest and abdomen. In fall-standing, many muscles are brought into activity on the dorsal part of the trunk, by which the chest is expanded in connection with an effect upon the circulation and respiration. The position is most suitable for young persons. Side-fall-standing has a powerful effect upon the muscles of the sides, and can be used with partial curvatures of the spine.

*d.—With the Head.*

The movements of the head include bending forward, backward, and sideways, together with twisting and rolling, and are generally taken from the primary position of the head.

The compound initial positions are combined with other initial positions, such as those of the legs with those of the arms; for example: *Walk-stretch-standing, walk-fan-standing, walk-reach-standing, walk-wing-standing, walk-rest-standing, etc.; stride-stretch-standing, stride-fan-standing, stride-reach-*



Fig. 36.

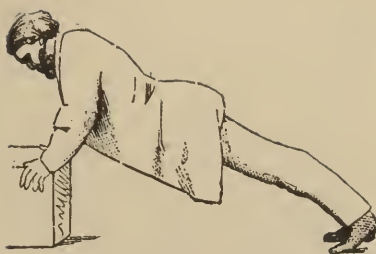


Fig. 37.



Fig. 38.



Fig. 39.



Fig. 40.



Fig. 41.



Fig. 42.



Fig. 43.



Fig. 44.



Fig. 45.



Fig. 46.



Fig. 47.



Fig. 48.



Fig. 49.



Fig. 50.

*standing, stride-wing-standing, etc.; knee-bend-stretch-standing, knee-bend-fan-standing, knee-bend-wing-standing, etc.*

New initial positions may arise by the combination of compound initial positions of the legs, arms, and trunk; as *stride-stretch-bow-standing, stride-fan-bow-standing, wing-knee-bend-bow-standing, wing-stride-stoop-standing.*

The sixteen compound initial positions of the legs, combined with the fifteen of the arms, make 240 initial positions. These combined with the twelve of the trunk make 2,880 initial positions. These latter combined with the four initial positions of the head, make 11,520. If we treat the remaining primary positions in the same way, we will find that an enormous number of compound initial positions may arise. In the same initial position several different movements may be given.

Hence it follows that the possible number of movements may be said to increase almost indefinitely; but this large number, with reference to gymnastics, has no important significance, hence these facts are given only passing notice.

#### COMPOUND INITIAL POSITIONS WITH THE KNEE-STANDING

##### PRIMARY POSITION.

##### *a.—With the Lower Extremities.*

1. *Walk-knee-standing.* — One knee is a foot-length forward of the other, the trunk and head remaining perpendicular, and the arms hanging at the sides or in the wing-position. Fig. 38.

2. *Stride-knee-standing.* — The knees are separated by a foot-length. Fig. 39.

3. *Half-knee-standing.* — Here only one knee is supported, while the other foot rests upon the floor. Fig. 40.

Through walk and half-knee-standing, it is possible by certain movements to make a more direct effect upon the groin, and the side of the pelvis corresponding to the hind knee in walk-standing, and the supported knee in half-knee-standing.

Through stride-knee-standing the pelvis is confined to firmness and precision by the movements given in this position.



b. — *With the Upper Extremities.*

1. *Wing-knee-standing.*
2. *Think-knee-standing.*
3. *Rest-knee-standing.*
4. *Stretch-knee-standing.*
5. *Half-stretch-knee-standing.*

These initial positions of the arms, as well as their various effects, have been explained in the foregoing.

c. — *With the Trunk.*

1. *Bow-knee-standing.*
2. *Side-bow-knee-standing.*
3. *Twist-knee-standing.*

Movements of the head seldom occur in the knee-standing position.

The compound initial positions of the legs and arms may be combined to form new positions; for example, *stretch-stride-knee-standing*, *half-stretch-stride-knee-standing*, *wing-stride-knee-standing*, *rest-stride-knee-standing*, etc.

The compound initial positions of the legs, arms, and trunk may be combined to form new initial positions; as, *wing-bow-stride-knee-standing*, *stretch-bow-stride-knee-standing*, *half-stretch-bow-stride-knee-standing*, *rest-bow-stride-knee-standing*, *stretch-twist-stride-knee-standing*.

COMPOUND INITIAL POSITIONS WITH THE SITTING PRIMARY POSITION.

a. — *With the Lower Extremities.*

1. *Long-sitting.* — All the dorsal parts of the legs rest upon the support (cot), the trunk, head, and arms being the same as in the sitting primary position. This position is also named *whole-sitting*. Fig. 41.

The organs of the abdomen, and to a certain degree those of the chest, are pressed together in this position. Hence it is not a suitable position for weak chest, heart difficulties, and obstruction.



2. *Half-long-sitting*.—Only one leg rests as in the preceding position ; the other is supported by the foot upon the floor. Fig. 42. Movements given in this position have different effects upon either side of the body.

3. *Half-sitting*.—One leg is laid upon a support at such a height that the thigh makes a right angle with the trunk ; the other leg supports the weight of the body ; the leg of the supported thigh can be moved from a stretch to a bent position without hindrance of the apparatus. Fig. 43. This is a fit position for knee-bending and stretching.

4. *Ride-sitting*.—One knee is placed on each side of the apparatus (a high cot), suitable support for the feet being supplied ; the trunk, head, and arms remain in the primary position.

This position is easy, and confines the pelvis, hence it is suitable for several movements of the trunk, such as rolling and twisting.

5. *Short-sitting*.—The patient sits upon a moderately high support, so that the legs hang free. In order to maintain this position, the attendant grasps under and forward of the patient's shoulders and draws backward. The arms may also take the wing position. Fig. 44. This position is of importance with difficulties of the abdomen.

6. *Stride-sitting*.—The feet and knees are separated two foot-lengths from each other, but otherwise there is no change from the sitting primary position. Through this position the legs obtain greater stability. Fig. 45.

*b. — With the Upper Extremities. .*

The principal compound initial positions of the arms in the sitting primary position are the following :—

1. *Stretch-sitting*.
2. *Fan-sitting*.
3. *Reach-sitting*.
4. *Half-stretch-sitting*.
5. *Stretch-support-sitting*.

6. *Wing-sitting.*
7. *Rest-sitting.*
8. *Think-sitting.*
9. *Reach-support-sitting.*

These initial positions of the arms have been previously described.

*c. — With the Trunk.*

The principal compound initial positions of the sitting primary positions are the following :—

1. *Bow-sitting.*
2. *Stoop-sitting.*
3. *Bow-stoop-sitting.*
4. *Twist-sitting.*

These positions of the trunk have also been previously described.

5. *Fall-sitting.* — The trunk and head lean backward, support being required by the knees. The position affects the anterior muscles of the abdomen, the chest (partially), and the neck. Fig. 46.

6. *Lax-sitting.* — As the name implies, the patient takes a falling-together and a somewhat leaning-forward position. The position is used for passive movements (side-shaking), through which the organs of the abdomen are operated upon. Fig. 47.

*d. — With the Head.*

The initial positions of the head in the sitting primary position, are the same as in standing.

*Combinations.*

The combinations of the compound initial positions of the sitting primary position are principally the following :—

1. *Stretch-stride-sitting.*
2. *Half-stretch-stride-sitting.*
3. *Fan-stride-sitting.*
4. *Stoop-stride-sitting.*

5. *Stretch-stoop-stride-sitting.*
6. *Fan-stoop-stride-sitting.*
7. *Reach-support-stoop-stride-sitting.*
8. *Stretch-twist-stride-sitting.*
9. *Wing-stoop-stride-sitting.*
10. *Rest-stoop-stride-sitting.*
11. *Wing-bow-stride-sitting.*
12. *Stretch-fall-sitting.*
13. *Wing-fall-sitting.*
14. *Wing-ride-sitting.*
15. *Rest-ride-sitting.*
16. *Think-ride-sitting.*
17. *Half-stretch-ride-sitting.*
18. *Wing-bow-ride-sitting.*
19. *Long-stride-sitting.*
20. *Think-stride-sitting.*

#### COMPOUND INITIAL POSITIONS WITH THE LYING PRIMARY POSITION.

##### *a.— With the Lower Extremities.*

1. *Stride-lying.*—The feet are separated by two foot-lengths, otherwise the position is the same as the primary.

2. *Crook-lying.*—Both legs are bent to an acute angle at the knees, the support of the feet having the same plane as that of the rest of the body. Fig. 48.

These postures are initial positions for leg movements and passive stomach movements.

##### *b.— With the Upper Extremities.*

1. *Stretch-lying.*
2. *Fan-lying.*
3. *Half-stretch-lying.*

The latter position is used in giving movements for curvature of the spine. Fan and stretch-lying expand the chest and favor breathing and the circulation of the blood. The trunk

and the head in the lying position have no special compound positions.

1. *Half-lying*.—The patient rests upon an apparatus (low cot) composed of two plane surfaces, which meet each other at an obtuse angle.

The position is convenient and especially fit for weak persons.

2. *Stride-half-lying*.—This position is the same as the foregoing, with the exception of the feet, which are separated by two foot-lengths.

3. *Crook-half-lying*.—The legs are bent to an acute angle at the knees, the feet resting upon the same surface as the rest of the body, or at an equal height with the body. Fig. 49.

4. *Stretch-half-lying*.—The arms are in the stretch position ; otherwise, the same as half-lying.

5. *Sit-lying*.—The back and thighs rest upon the cot, the lower legs hanging free. Fig. 50.

6. *Forward-lying*.—The elbows, abdomen, and upper part of the thighs rest upon the cot.

7. *Leg-lying*.—The posterior parts of the legs rest upon the cot ; the trunk is maintained by the muscles in the same plane as the legs outside of the support. The arms lie at the sides, or take the wing position. Fig. 51.

8. *Stretch-leg-lying*.—The same as the preceding, with the arms stretched.

9. *Half-stretch-leg-lying*.—The same as leg-lying, with one arm stretched.

10. *Trunk-lying*.—The posterior surface of the trunk rests upon the cot, while the legs are without. The arms lie at the sides. The position operates upon the tensor muscles of the knee-joints and the flexor muscles of the hip-joints, together with the muscles of the abdomen. The arms may also take the stretch or fan position. Fig. 52.

11. *Leg-forward-lying*.—The anterior part of the legs rests upon the cot, and the trunk is held in a horizontal position by

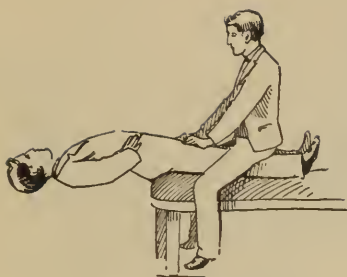


Fig. 51.

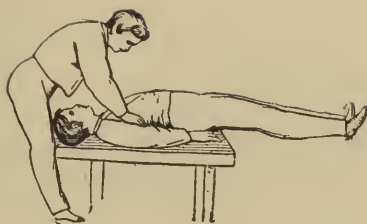


Fig. 52.



Fig. 53.

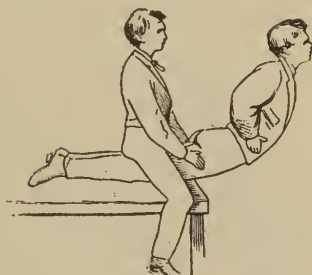


Fig. 54.



Fig. 55.

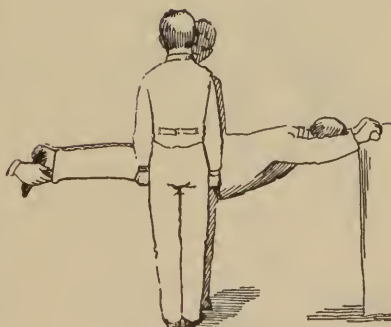


Fig. 56.



Fig. 57.



Fig. 58.



Fig. 59.



Fig. 60.



Fig. 61.



Fig. 62.

the tensor muscles of the back and thighs. The arms have the wing or stretch position. Fig. 53.

12. *Bow-leg-forward-lying*. — The trunk and head form a bow; the arms have usually the wing-position. Fig. 54. This position is also called *forward-lying, holding*. It tends to expand the chest and strengthen the tensor muscles of the back and thighs.

13. *Bow-side-leg-lying*. — The sides of the legs (opposite) rest upon the cot, the trunk taking the side-bow-position, as Fig. 55 illustrates. It is an important position for partial curvature of the spine, as it operates upon the muscles of one side, and can thus stretch the spinal column by contracting the muscles of the concave side.

#### COMPOUND INITIAL POSITIONS WITH THE HANGING PRIMARY POSITION.

1. *Heave-hanging*. — The hands grasp a bar or other apparatus, and the arms are bent in a heave position; the upper arms are in line and hight with the shoulders; the forearms are perpendicular and at right angles to the upper arms; in this way the body is raised from the floor. The position has a powerful effect upon the tensor muscles of the arms and also upon the chest.

2. *Crook-heave-hanging*. — The arms take the same position as in the foregoing, after which the legs are bent so that the trunk forms a right angle with the thighs, and the thighs with the lower legs.

This position operates, as does the preceding, upon the arms and chest, besides the abdomen. For weak people these positions are too fatiguing.

3. *Swim-hanging*. — The hands, separated by a space equal to that between the shoulders, grasp a suitable apparatus. Another person lifts the legs so that the body and stretched arms are in a horizontal position. Fig. 56.

This position expands the anterior parts of the body, and operates upon the breathing and circulation.



4. *Whip-hanging*. — The one who is to take this position places himself under a horizontal bar or the like, and grasps the same with the hands, after which one foot is thrown over the bar from each side, as the accompanying figure illustrates. With the exception of the hands and feet, the entire body is beneath the apparatus. Fig. 57.

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## MOVEMENTS.

Although many of the initial positions require in themselves not a little muscular power, their primary signification is to limit and give to the movements a more definite effect. The special movements have generally received their names from their characteristic qualities. Hence that movement is called *bending* which places some part of the body at right angles to another part. Again, that movement which restores the body, or a part of it, from a bent to a straight position, is called *stretching*. *Twisting* is the name of the circular movements which occur about the median axis of the body or some part of it. The circular movements have received the name of *rolling*. Nevertheless, no one method of naming the movements has been followed. Thus we have the names *heaving*, *dragging*, etc., applied to movements which place parts of the body in the relation to each other of bending and stretching.

The most common names of the movements are the following: Bending, stretching, twisting, dragging, raising, rolling, parting, closing, heaving, holding, extending, swinging, flying, pressing, expanding, lifting, hacking, clapping, beating, stroking, shaking, fulling, kneading, sawing, and ringing.

## BENDING AND STRETCHING.

Bending and stretching are described together, since they are often given, one immediately after the other, making, as it were, one movement.

*a.—With the Lower Extremities.*

1. *Half-lying, foot-bending and stretching.* — The attendant seats himself at the side of the patient's feet, and lays one foot on his knee.

In the bending of the foot, resistance is made against the distal ends of the metatarsal bones and the dorsal parts of the toes, and in stretching, against the plantar part. The position of the hands should be such that one hand is best adapted to bending and the other to stretching.

If both feet are to be bent and stretched simultaneously, the attendant seats himself opposite the patient, laying both the patient's feet on his knees, the heels resting upon a suitable cushion. The resistance is made against both feet simultaneously. Fig. 58.

Bending and stretching of the feet as well as other parts of the body should be repeated from six to eight times, according to the condition of the individual.

2. *High-reach-support-standing, foot-bending and stretching.* — At the foot of a perpendicular ladder, or the like, a stool is placed, upon which the patient steps, facing the apparatus, which he grasps with the hands, placing one foot on the edge of the stool, so that it is free to be bent and stretched. The attendant, standing or sitting, places the palm of his hand upon the distal ends of the metatarsal bones and upper part of the toes in bending, and the opposite plantar part in stretching, in order to render suitable resistance.\*

3. *Free-standing, foot-bending and stretching.* — In the standing position the feet may be stretched as in toe-standing. The heels are lifted from the floor, and the weight of the body rests upon the distal ends of the metatarsal bones, and the toes. In bending, the toes are raised, and the body's weight falls upon the heels. Bending and stretching may be varied by different positions, as close-standing, walk-standing, and stride-standing.

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\* It is evident that either special bending or special stretching may be given if one wishes to operate particularly upon the flexor or extensor muscles.

In bending and stretching the foot, bending and stretching of the toes also occurs, although reversely, so that bending of the toes occurs in conjunction with foot-stretching, and *vice versa*.

The half-lying initial position is restful, and suitable for weak persons; neither is reach-support-standing a very fatiguing position. Free-standing has the advantage of being independent of assistance, but cannot be moderated as much as movements given by another person.

In these movements the muscles of the feet and lower legs are more or less active. The movements are used for stiffness of the tendons of the foot and weakness of the muscles named; also as derivative movements for congestion and difficulties arising therefrom, in the organs of the pelvis, abdomen, and chest, also in the brain and spinal cord. They are used for cold feet, a condition which is commonly found with *anæmia*, chlorosis, and general weakness.

These movements of the feet should be taken not only at the gymnasium, but also at home, in connection with the ordinary occupation, especially if this is sedentary. This is of importance for people of all ages, and is also beneficial for the weaknesses of old age, when the blood circulates slowly, especially in the parts farthest distant from the heart.

The mobility of the knee tendons is confined almost wholly to bending and stretching. Only in bending the lower leg, is twisting upon its axis possible. The lower leg can be bent to an acute angle at the knee-joint, but should generally not exceed a right angle. If either stretching or bending is particularly intended, it is designated. The movement can take place in different positions.

4. *Half-lying, knee-bending and stretching*.—The attendant seats himself at the side of the legs of the patient, taking the thigh upon his knee, so that the patient's leg is free for bending and stretching. In stretching, the attendant places his hand upon the ankle, and in bending, under the heel, while the other hand holds the knee in place. Fig. 59.

5. *Half-sitting, knee-bending and stretching*.—The attendant takes a suitable position, and places his hands as in the preceding exercise. Fig. 60.

6. *Forward-lying, knee-bending and stretching*.—After the position is taken on a high cot or something similar, the lower leg is bent and stretched alternately, while the attendant stands back of the patient, and makes resistance upon the heels in bending, and the ankle in stretching.

7. *Sit-lying, knee-bending and stretching*.—As in the former case, the resistance is made upon the ankles and heels. The movement can also be given in stretch and fan-sit-lying. The half-lying and half-sitting positions are the most convenient. Sit and forward-lying are better suited for young than for old people. The weak and the aged cannot always endure the low horizontal position of the head.

Knee-bending and stretching is applied for stiffness or laxity of the knee tendons, and for weakness of the thigh muscles; further, it is derivative for disturbance of the blood circulation, for diseases of the organs of the pelvis, and also for all kinds of disorders of the organs of digestion and respiration, and diseases of the brain and spinal cord.

Next to the shoulder-joint, the hip-joint, in the human body, has the greatest mobility. In bending and stretching singly with this joint, other names are used, as, *impression*, *insertion*, etc. In the free-standing position, the tendons of the thighs, legs, and feet are in play at the same time, and from this the movement has received the name of *knee-bending*. It is only the extensor muscles which come into activity in knee-bending; for the weight of the body causes the bending of the legs, and the extensor muscles must counteract the bending so that it does not occur too rapidly.

1. *Toe-standing, knee-bending.*
2. *Wing-standing, knee-bending.*
3. *Stretch-standing, knee-bending.*
4. *Fan-standing, knee-bending.*
5. *Stride-standing, knee-bending.*

These free-standing leg-bendings have a strengthening effect for weakness in the lower extremities, are relaxing and strengthening for stiffness of the tendons, and are derivative from the organs of the trunk and head.

6. *Reach-support-bow-standing, knee-bending*.—This movement is generally given in connection with stomach and loins-pressing, by one or two attendants. In stretching the legs, the patient takes the bow-position and holds the arms straight. Fig. 61. This movement not only affects the legs, but also has a stimulating effect upon the organs of digestion.

7. *Reach-support-instep-support-standing, knee-bending* is given most commonly in connection with stomach and loins-pressing, and has a similar effect to the preceding, though more powerful.

8. *Half-crook-lying, leg-out-stretching*.—The attendant places himself at the side of the patient's leg, and after one leg has been bent, grasps with one hand the heel, and with the other the plantar side of the toes, taking the fall-out position opposite the patient, who stretches the leg under the resistance of the attendant. Fig. 62.

This movement is much used in medical gymnastics; for the initial position is convenient. It operates upon the extensor muscles of the thigh and lower leg, and is derivative for disorders of the pelvis, abdomen, and chest.

9. *Stretch-bow-swing-standing, knee-bending*.—The attendant stands back of the patient, on the cot that supports the instep of the patient, and grasps the patient's hand in order to resist stretching of the leg. Fig. 63. The movement has a strengthening effect upon the legs, and also upon the organs of the chest and abdomen.

10. *Half-stretch-swing-standing, knee-bending, stomach-loins-pressing*.—The stretched arm and the swing-standing leg are opposite. The movement has a general effect, since it extends its influence upon digestion, respiration, circulation, etc.



Fig. 63.



Fig. 64.



Fig. 65.

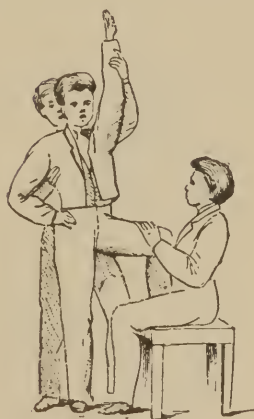


Fig. 66.





Fig. 67.



Fig. 68.



Fig. 69.



Fig. 70.



Fig. 71.



*b. — With the Upper Extremities.*

The fingers, as well as the thumb, may be bent and stretched in the sitting, half-lying, or standing positions. The bending occurs toward the palm, and stretching, toward the dorsal side. The attendant makes resistance. In the same way the hand is bent and stretched under resistance of the attendant, upon the palmar surface of the hand in bending, and the dorsal in stretching. Bending and stretching of the lower arm may occur in the standing, sitting, or half-lying positions. The resistance is made upon the palms in bending, and the dorsal part of the hand in stretching. The position of the upper arm may be either as in the primary position, or as in fan-standing.

1. *Standing, lower-arm-bending and stretching.* — These movements may be performed with both arms simultaneously, for which the attendant stands in front of the patient, and makes resistance upon the palmar surface of the hands in bending, and the dorsal in stretching. Bending and stretching of the fingers, hands, and lower arms are often taken together; this is designated, for brevity in practical exercise, by the phrase, “for cold hands.” These movements are employed as derivative for diseases of the lungs and heart as well as for cold hands.

Upward bending of the arms is a common initial position for stretching upward and outward. These stretchings, performed without resistance, might be used with advantage even in medical gymnastics. For expanding the chest they are suitable, especially for young persons with small chests, so far as a diseased condition of the chest or too great weakness do not hinder their use. Bending and stretching the arms with resistance of the attendant is performed in different positions.

2. *Stretch-bow-sitting, arm-bending and stretching.* — The attendant stands back of the patient, and grasps his hands, in order to make proper resistance in bending and stretching of the

arms. In bending, as well as stretching, the elbows are bent outward, so that the movement takes place in the side plane.

Bending and stretching of the fingers, hands, and lower arms, has a derivative effect upon the heart and respiration without hastening their work; hence they may be used for heart or lung difficulties. On the other hand, in arm-bending and stretching, when the muscles which are inserted on the walls of the thoracic cavity come into play, the heart is vigorously affected, and it is unsuitable for heart difficulties and severe lung disorders. This includes arm-bending and stretching in different initial positions, although the position may largely modify the effects.

The general effect of arm-bending and stretching in various positions, consists in strengthening the arms, relaxing their tendons, expanding the chest, and increasing the activity of respiration and blood circulation.

3. *Stretch-stoop-stride-sitting, arm-bending and stretching.*—The attendant places himself in front of the patient, preferably on an elevation, and grasps the patient's hands in order to make resistance in bending as well as in stretching. Fig. 64.

In all this bending and stretching it is important that the elbows should be thrust backward. By means of this position the movement operates upon the muscles of the back.

4. *Stretch-twist-stride-sitting, arm-bending and stretching.*—The movement is given as in stretch-bow-sitting, with the difference that the patient performs the movement in the twist position of the trunk, first to one side and afterward to the other. By means of the twist position the interior parts of the trunk are affected.

5. *Stretch-lying, arm-bending and stretching.*—The attendant makes resistance in bending as well as in stretching. The arms follow the surface upon which the patient lies. The movement has a powerful effect upon the organs of respiration and circulation.

6. *Stretch-legs-forward-lying, arm-bending and stretching.*—Arm-bending and stretching occurs under resistance of the at-

tendant, who grasps the patient's hands. By means of the position the extensor muscles of the back and thigh are active, by which the movement becomes tiring and is only suitable for practical and powerful gymnasts.

Arm-bending and stretching is likewise given in the standing position, especially to young persons, and may occur in stride, walk, and fall-out-standing.

7. *Thigh-support-leaning, arms-upward-stretching*.—After the initial position is taken, the arms are stretched upward under resistance of the attendant upon the palmar surface of the hands. The movement may be used with advantage for slight curvature of the spine if the shoulder-blades have like positions. When one shoulder-blade is lower, the upward stretching is done only by the opposite arm.

#### c. — *With the Trunk.*

In the free-standing position, bending is done forward and backward and also to both sides in various positions. These bendings are valuable movements, and they should therefore be briefly noted.

1. *Wing-bow-standing, forward and backward-bending*.—The bending takes place forward as far as the natural form will allow, after which straightening and backward-bending follow. This latter bending cannot be very deep without fatigue. The knees remain straight.

2. *Stretch-standing, forward and backward-bending*.—Here the trunk is flexed forward and backward as far as the form will allow, the arms and head following in bending forward as well as backward. The same movement may be executed in the stride-standing position.

3. *Stretch-stride-standing, side-bending and stretching*.—The flexion takes place first to one, and afterward to the other side, the shoulders being kept in the side plane. The arms and legs are kept straight, the feet retaining their position.

These movements do not demand great muscular strain. At the outset of bending, a slight degree of muscular activity is

required, but as soon as the bend is so great that gravitation acts, the movement continues till the muscles of the opposite side prevent it. Hence the principal effect of these movements is upon the muscles of the back and upon the spinal cord, and also the nerves branching out from it; further, upon the vessels of the abdomen and chest as well as those of the neural cavity, and hence indirectly upon the organs in which these vessels and nerves circulate. These movements may be taken independently of gymnasiums and assistance.

4. *High-ride-bow-sitting, back-backward-bending*.—Two gymnasts each place one hand upon the patient's neck, one above, the other below, the forearm resting between the shoulders; the other hand is placed loosely upon the shoulder, and otherwise as suitable a position as possible is taken. The patient bends the trunk backward against resistance of the attendants, and the trunk is pressed upward by the latter, under resistance of the patient. The movement can be modified according to the strength of the patient, and hence is proper treatment for the muscles of the back in almost every case in which those muscles have become weak and flabby. It has an expanding effect upon the chest and an invigorating effect upon respiration and circulation. Fig 65.

The movement may also be taken with stretched arms, when the attendants grasp the patient's hands. In this position the movement is more straining than in the preceding.

5. *Half-stretch-side-step-standing, side-bending*.—The stretched arm should correspond to the same side as the step-standing foot. The attendant, standing back of the patient, places his arm against the external part of the patient's corresponding arm, and places the other forward under the opposite armpit, in order to make the necessary resistance. The bending is performed from the step-standing leg, by the attendant under the resistance of the patient, after which the latter returns to position under resistance of the former. Fig. 66.

The movement is performed equally by both sides, and oper-

ates more or less upon all the muscles of the sides. Through bending of the spinal column the movement has an influence upon the vessels and nerves.

6. *Rest-hip-support-walk-standing, side-bending.* — The patient stands with one hip against a proper apparatus, and takes the walk position with the foot opposite the supported hip. The attendant places himself upon the other side of the apparatus, and places both hands upon the opposite shoulder of the patient, in order to draw the latter sideways toward himself under the patient's resistance. The patient raises himself under resistance of the attendant. The treatment is of course equal to both sides, except where, for particular reason, the movement is to be given to one side only.

7. *Stretch-standing, side-bending with hand-pressing.* — The attendant stands behind the patient upon an elevation, pressing with his hands upon the palmar surface of the patient's hands, during which side-bending occurs alternately from one side to the other. Fig. 67. This is also taken in stride-standing.

The performance of this movement demands extreme precision from the patient as well as the attendant. This movement, like the preceding, has a powerful effect upon the muscles of the side, upon respiration and circulation, and the spinal column.

8. *Half-stretch-high-ride-sitting, side-bending.* — The bending takes place toward the side opposite the stretched arm. The attendant, standing back of the patient, grasps with one hand the stretched arm and with the other the opposite shoulder. Under resistance of the patient the trunk is bent slowly to the side about half way to the horizontal position. In rising, resistance is made by the attendant. The movement is applied to both sides with change of the position of the arms. Fig. 68.

9. *Half-stretch-high-ride-twist-sitting, side-bending.* — The movement is similar to the foregoing, except that it takes place in an oblique direction. These movements have a powerful effect upon the muscles of the sides, and also the organs of the abdomen and chest.

*d.— With the Head.*

In the free-standing position, the head, like the trunk, may be bent forward and backward and to either side. It should be noted that ordinarily the head should not be bent forward as often as backward, for this reason, that the head in the upright position constantly tends to fall forward by its own weight. These flexions are performed most conveniently in the standing position, but may also be taken sitting. The shoulders should be fixed in these movements.

These flexions operate upon the muscles of the cervical vertebræ, that part of the spinal cord belonging to the neck, the vessels and nerves found in the neck, and through these upon other parts, as the brain, and the organs of the thorax. If these movements are taken under resistance, such resistance is made upon the neck in backward-bending, on the forehead in forward-bending, and the corresponding sides in side-bending.

1. *Reach-support-standing, neck-bending.* — The attendant places one hand upon the neck, and makes proper resistance, while the patient bends the neck backward as far as possible. Of course the movement has a more powerful effect than when the bending is done without resistance. The effect is not confined to muscles of the neck, but also reaches some of those of the back.

The movement is derivative from the brain, and is effective for rheumatism of the muscles of the neck.

2. *Stoop-fall-reach-support-standing, neck-bending.* — The bending and resistance are performed as in the preceding. Because of the initial position, the effects of this movement are more powerful than the foregoing.

3. *Swim-hanging, neck-bending.* — The resistance is best made by two attendants, who, with one hand each, make resistance upon the neck, and with the other support the abdomen. The movement may be used for curvature of the spine, and also for rheumatism of the neck muscles.



4. *Stretch-leg-forward-lying, neck-bending*.— One attendant stands on each side of the patient, grasping with one hand the stretched arm, and with the other makes proper resistance when the patient bends the head backward. On account of the position the movement is useful for curvature of the spine, and for rheumatism and stiffness of the same.

### TWISTING.

Twisting has its proper use in connection with the trunk, and is sometimes given to the extremities.

#### *a. — With the Lower Extremities.*

The foot may be twisted about its longitudinal axis, that is, the inner and outer parts can be alternately twisted upward and downward. Here the anterior and posterior muscles of the shin bone on one side, and the fibula on the other, come into play.

This movement is applicable for stiffness of the ankle-joints, and also to the foot, if it, on account of weakness in those muscles intended to maintain the balance, turns inward or outward in walking. If the weakness is only in one side, the movement is given only to that side.

The movement can be given in the half-lying position. The attendant seats himself by the side of the patient's feet, lays the nearest foot upon his knee, and grasps the ball of the foot with one hand and with the other holds the ankle at rest.

The chief motion of the knee-joint consists in bending and stretching, but it is not a perfect hinge-joint, and when the lower leg is bent to a right angle with the thigh, allows twisting about the median axis. When the leg is stretched, the tendons prevent such movement.

Whether the movement is given in the standing, sitting, or forward-lying position, the knee must be flexed. For stiffness of the knee-joints the movement is of importance.

The attendant grasps the foot and moves it perpendicularly from side to side, by which motion the lower leg is twisted



about its median axis as much as the mobility of the knee-joint allows. The hip-joint being a ball-and-socket joint allows twisting of the leg about its median axis. This twisting is given best in the half-lying position.

*Half-lying, leg-twisting (outward and inward).*—The attendant seats himself in front of the patient, so that the latter can with stretched legs rest his heels upon the attendant's knees. The attendant twists the feet simultaneously outward and inward, under suitable resistance of the patient. The movement may also be given with one foot at a time. The movement is employed for stiffness of the hip-joints or weakness of the muscles affected by the twisting. It is also derivative, especially for diseases of the organs of the pelvis.

*b. — With the Upper Extremities.*

Twisting may occur in the joints between the fingers and metacarpal bones. Here the finger is grasped and twisted alternately from one side to the other. The movement can only be given passively, and is of importance for stiffness of these joints.

The hand can be twisted inward and outward through the twisting of the radius about the ulna. The movement can be taken in the sitting position with the forearm flexed, under resistance of the attendant, who grasps directly either the patient's hand or a staff (a foot long), which the patient holds in his hand.

The movement is used for weakness of the pronators and supinators. If the weakness is confined to but one of these groups of muscles, the movement is of course applied only to that group. It is employed for stiffness of the wrist-joint and for cold hands.

Twisting of the upper arms is performed by muscles which originate in the trunk and shoulder-blade, but are inserted at the upper part of the arm. If the arm is twisted in a stretched position under resistance of the hand, the pronators and supinators of the hand come into action.

*Half-stretch-sitting, arm-twisting (with staff).*—The patient grasps the middle of the staff by means of which resistance is made by the attendant. It can be changed in such a way that the attendant does the twisting under resistance of the patient. The movement is given in the same way in the fan-sitting position.

The movement is chiefly used for stiffness of the shoulder-joint, and for enervation of the muscles of the arm, as in writers' cramp. It can also be used as derivative from the head and chest.

*c.—With the Trunk.*

As in bending of the trunk, twisting depends upon the amount of mobility between the different vertebræ. The muscles of the trunk in twisting work unitedly in a peculiar manner. The majority of the muscles of the trunk proceed in the direction of their fibers spirally about the trunk. By reason of this their working in unison in twisting is necessary. If twisting of the trunk is done under resistance of the attendant's hands, one in front of one shoulder and the other back of the other shoulder, then the majority of the muscles of the anterior part of the trunk work together to overcome the resistance in front of the shoulder, and twist the shoulder forward, and at the same time the majority of the posterior muscles of the trunk work together to twist the opposite shoulder backward.

By means of different initial positions for these twisting movements, this working together can be considerably modified, so that a greater muscular activity is produced in the posterior than in the anterior part; but their co-ordinate action in the manner described is still always more or less valuable.

Twisting about the longitudinal axis of the trunk is called *alternate-twisting*, if it is given alternately to both sides. If the twisting is given several times, first to one side and then to the other, it is called *forward-twisting*.

Here the most common twistings will be mentioned:—

1. *Wing-bow-lean-standing, alternate-twisting.*—The heels should be supported. The attendant stands back of the pa-

tient and makes resistance in front of one shoulder and back of the other. Fig. 69.

The ordinary effects of twisting, as before noticed, are upon the vertebræ, the spinal column, and the surrounding vessels and nerves arising from it; upon respiration, circulation, and digestion, the effects differing with different initial positions; and lastly upon the muscles of the trunk, the effects varying with different positions.

2. *Wing-bow-stride-standing, alternate-twisting.*

3. *Wing-bow-walk-standing, forward-twisting.* — The shoulder opposite the walk-standing foot is twisted forward.

4. *Wing-half-stretch-twist-standing, forward-twisting.* — The attendant stands back of the patient and with one hand grasps his wrist, placing the other back of the opposite shoulder: after which, forward twisting and resistance is done as in the foregoing.

5. *Wing-half-stretch-stride-standing, forward-twisting.*

6. *Wing-half-stretch-walk-standing, forward-twisting.* — The stretched arm and the walk-standing foot are opposite.

7. *Wing-half-stretch-step-twist-standing, forward-twisting.* — The stretched arm and the step-standing foot are opposite. Fig. 70.

8. *Rest-standing, alternate-twisting.* — The attendant grasps with his hands both elbows of the patient and makes proper resistance.

9. *Half-stretch-thigh-support-twist-standing, forward-twisting.* — The attendant stands behind the patient, preferably upon an elevation, and with one hand grasps his wrist, and places the other under the opposite shoulder, making suitable resistance at both places.

10. *Stretch-thigh-support-standing, alternate-twisting.* — The attendant stands behind upon an elevation and with his hands grasps the patient's wrists, after which the twisting takes place alternately, first to one side and then to the other.

11. *Weight-bow-leaning, alternate-twisting.* — The attendant stands in front of the patient, placing one hand back of one



Fig. 72.



Fig. 73.

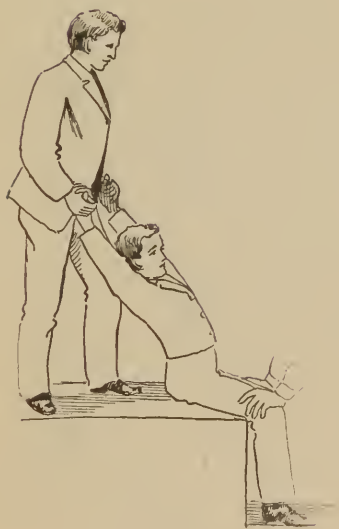


Fig. 74.



Fig. 75.



Fig. 76.



Fig. 77.



Fig. 78.



Fig. 79.

shoulder and the other forward of the opposite shoulder, and makes suitable resistance during the twisting. Fig. 71. It is plain that in this, as well as in other similar movements, it is of no real consequence whether the twisting is performed alternately to the right and left, or first several times to one side and afterward to the other.

12. *High-stride-knee-bow-standing, alternate-twisting.*—The attendant stands behind the patient, grasping the shoulders with his hands, one forward and the other back of the shoulders, and resists as already described. The attendant, during the twisting, supports with one knee the loins of the patient, in order to give him a more stable position. Fig. 72.

Just as in the standing primary position, various initial positions may be taken ; as :—

13. *High-walk-knee-standing, alternate-twisting.*

14. *Half-stretch-stride-knee-twist-standing, alternate-twisting.*

15. *Rest-stride-knee-standing, alternate-twisting.*

16. *Think-stride-knee-standing, alternate-twisting.*

17. *Wing-sitting, alternate-twisting.*—The attendant stands in front of the patient, and places his hands upon his shoulders, as already directed. Fig. 73.

18. *Wing-bow-stride-sitting, alternate-twisting.*

19. *Stoop-stride-sitting, alternate-twisting.*

20. *Stretch-stride-sitting, alternate-twisting.*

21. *Stretch-fall-stride-sitting, alternate-twisting.*—The attendant stands behind on the same support on which the patient sits, grasps the hands of the latter, and supports his back with one knee. The twisting occurs while the leaning backward is maintained. Fig. 74.

22. *Stretch-stoop-stride-sitting, alternate-twisting.*—The attendant stands on a stool in front of the patient, and grasps his hands in order to make resistance during the twisting. Here extreme accuracy is demanded from the patient as well as the attendant. Fig. 75.

23. *High-ride-sitting, alternate-twisting.*—The resistance is made against the shoulders, as heretofore described. Fig. 76.



24. *Rest-high-ride-sitting, alternate-twisting.*

25. *Think-high-ride-sitting, alternate-twisting.*

26. *Wing-high-ride-fall-twist-sitting, alternate-twisting.*—The attendant places one arm forward of one of the patient's shoulders, grasping his wrist; with his chest he supports the back of the patient, and grasps under the opposite shoulder with the other hand. Fig. 77. The twisting is done in the backward-leaning position under suitable resistance from the attendant.

27. *Half-stretch-high-ride-fall-twist-sitting, forward-twisting.*—The attendant with one hand grasps the wrist of the patient's stretched arm, and places his other arm and hand obliquely under the patient's back so as to render proper resistance during twisting. Fig. 78.

28. *Half-stretch-twist-leg-lying, forward-twisting.*

29. *Leg-forward-lying, alternate-twisting.*—The attendant stands in front of the patient, and places his hands upon the shoulders of the latter as already directed, and makes suitable resistance according to the strength of the patient.

It may already have become evident from the movements here presented, that although they seem different because of the various initial positions, they have nevertheless a similar character and effect. Although it seems unreasonable to seek out a large number of movements, since all possible movements should no more be used than all that it is possible to eat should be eaten; nevertheless it cannot be denied that the modified effects are, especially in medical gymnastics, of the greatest importance.

In reference to the twisting movements described above, it is evident that they are not only more or less difficult to perform, but also that the effects in the same degree of straining are of considerable difference. Thus the stretch position of the arms has a powerful effect upon respiration and circulation. The initial position in one case may cause the movement to be concentrated more upon the muscles of the pelvis, and operate against obstruction, colic pains, hæmorrhoids, etc.; in another

case the initial position may direct a more powerful effect upon the muscles of the back. But all these twistings are similar, in that they operate more or less upon the digestion, respiration, circulation, and the nervous system.

In the preceding twistings the hips have been more or less at rest, but the twisting may occur principally with the hips, and is then called *hips-alternate-twisting*.

30. *Stretch-support-standing, hips-alternate-twisting*. — The patient stands between two perpendicular fixed poles, which he, in the stretch position, grasps with his hands. The attendant stands behind and places one hand forward and the other back of the patient's hips, and makes resistance, while the hips are twisted forward and backward. While one hip is twisted forward the other is twisted backward. Fig. 79.

31. *Heave-support-standing, hips-alternate-twisting*.

32. *Talk-standing, hips-alternate-twisting*.

33. *Fan-support-standing, hips-alternate-twisting*.

34. *Fall-stoop-standing, hips-alternate-twisting*.

35. *Swim-hanging, hips-alternate-twisting* — These initial positions have been heretofore explained.

The movement (twisting of the hips), as well as the positions of the hands, is always the same, no matter how different the initial position. The muscles of the stomach, together with those of the lumbar region, of the pelvis, and also those of the thighs, come into play in this movement.

Since a large number of muscles come into activity in this movement, it has a strong derivative effect, especially upon the organs of the pelvis. Hence it is prescribed for hæmorrhoids and catarrh of the bladder, womb, intestines, and stomach.

Here, as in other movements with different initial positions, one begins with the easiest, especially with weak individuals; but as fast as the strength is increased, other suitable positions are chosen, by which the movement has renewed influence.

36. *Wing-stoop-stride-sitting, screw-twisting* is given by two attendants, one on each side of the patient. These each grasp

an upper arm of the patient and place their other hands, one over the other, upon his loins. The movement is given passively in such a way that the attendants alternately twist the patient's shoulders backward quickly without otherwise changing the initial position. Hereby the movement takes the form of screw-twisting. After four to six twists, a short pause is made, after which the movement and the pause is renewed from three to four times.

If the movement is given quickly and vigorously, so that the attendants throw the patient's sides backward alternately, and thereupon let go the arm a moment, it is called *throw-twisting*.

By means of this quick twisting in connection with the forward-leaning position, a compression and at the same time an irritation of the walls of the vessels, is attained, especially of the laxer walls of the veins, by which the blood circulation of the organs of the pelvis and abdomen is proportionately quickened.

The movement is effectual for diarrhœa, hæmorrhoids, womb difficulties, hyperæma of the liver, etc. Throw-twisting is more powerful, and has sometimes shown itself effective for chronic nervous headache, but in that case the forward-lying position is used.

37. *Wing-high-ride-sitting, screw-twisting* is given as the preceding, except that the hands, which render the support, are placed between the shoulders. This movement is more operative upon the respiratory organs than the preceding, and is used for emphysema of the lungs and chest cramp.

38. *Wing-high-stride-knee-bow-standing, screw-twisting*.—The attendant stands behind the patient and, grasping under and forward of his shoulders, supports him with his knee against the loins, and brings about a screw-twisting by alternately pulling each shoulder backward. The movement has a powerful effect upon the organs of the abdomen, hence is useful for constipation and suppressed menstruation. With bow and circle-twisting the twisting occurs about an intended axis.

39. *Half-stretch-high-ride-sitting, bow-twisting.*—The attendant with one hand grasps the wrist of the patient's stretched arm, and places the other arm and hand across the patient's opposite shoulder as a support, after which circular twisting takes place outward, downward, and upward. The patient makes gentle resistance in going down, and the attendant in coming up. The movement is quite straining, so that three or four times to each side may be enough. It has effects similar to screw-twisting, irritating certain vessels and nerves, and through these the organs through which these vessels and nerves are diffused. This movement is especially effective upon the portal system and the organs of the abdomen, but it also extends its effects to the organs of the chest.

40. *High-ride-twist-fall-sitting, circle-twisting.*—Circular twisting is purely passive, and consists in a circular movement from the median line, first to one and then to the other side, repeated from six to twelve times to each side. The attendant stands behind, grasps in front of the patient's shoulder with one arm, and the opposite shoulder with the other, and with his chest supports the patient's back.

The movement operates as the preceding, upon the organs of the abdomen and chest, but is less straining.

Twisting of the head in the standing or sitting position may be given with or without resistance upon the temples. In the latter case the movement has a more powerful effect.

Head-twisting operates upon the cervical vessels and nerves, upon the cervical vertebræ and their ligaments, and is derivative from the brain.

Free-standing twisting of the trunk without resistance may be taken in various initial positions, as wing-standing and rest-standing. These free-standing twistings also operate upon the blood circulation, and upon the respiratory and digestive organs.

#### DRAGGING.

The name *dragging*, for movements, has arisen because of the manner in which they are given. Movements of this

class are more frequently used as trunk movements than for the extremities.

*a.—To the Lower Extremities.*

1. *High-reach-support-standing, leg-backward-dragging.* — The patient stands upon an elevation (a chair); the attendant takes a position behind, grasping one foot with one hand, and supporting the corresponding hip with the other, and drags the foot backward under resistance of the patient, after which the latter brings the foot forward under resistance of the attendant. The patient keeps the knee-joint stiff during the movement, and the body otherwise as in the initial position.

The leg is dragged backward as far as the position will allow without other change and without straining; it returns to a position one foot-length forward of the resting foot. In this movement the skin of the anterior part of the trunk is expanded; the muscles of the abdomen and hip-joint, and the extensor muscles of the knee-joint are active. Fig. 80.

This movement has a laxative effect, and is also derivative for the pelvic and abdominal organs. It is repeated eight to sixteen times.

2. *Half-toe-sitting, leg-backward-dragging.* — When a suitable apparatus, such as a high stool, is used, the patient places his hands in the reach-support position, supported by one leg bent to a right angle, the ball of the foot resting against a perpendicular support. The attendant, standing behind, grasps the ankle of the free-hanging leg, and drags it backward, as in the preceding movement.

The movement has an effect similar to the foregoing, but is more straining and cannot be applied to weak persons, neither is it suitable at the beginning of a course of treatment.

3. *Half-lying, leg-upward-dragging.* — The attendant grasps one of the patient's feet and makes resistance, while the patient pulls his foot towards himself by bending the leg. When the leg has been bent as far as possible, the attendant pulls it back to the first position under resistance of the patient. Fig. 81.

If the movement is performed by both legs at the same time, it is called *half-lying, double leg-upward-dragging*.



Fig. 80.



Fig. 81.



Fig. 82.



Fig. 83.



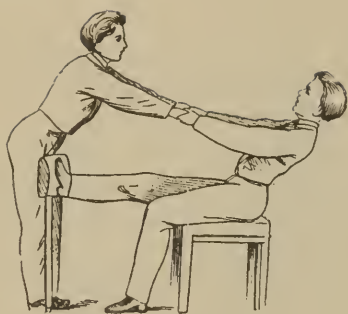


Fig. 84.



Fig. 85.



Fig. 86



Fig. 87.



Fig. 88.

4. *Short-sitting, double leg-upward-dragging.*
5. *Stretch-lying, double leg-upward-dragging.*
6. *Stretch-support-bow-standing, leg-upward-dragging.*

These last four movements have an effect similar to the first two, except that the flexor muscles of the knee-joint come into play instead of the extensor muscles. The last is quite fatiguing and can only be performed by strong persons, and those accustomed to the movements.

There are no dragging movements with the arms.

*b.—With the Trunk.*

In the standing primary position the trunk may be drawn backward slightly by the attendant, but without support the movement is unstable. Hence it is of importance that the position should be made stable by means of support or a suitable initial position.

1. *Wing-loins-support-standing, backward-dragging.*—The attendant stands back of the patient, grasping under and forward of the shoulders, and, under resistance of the latter, drags him backward. On returning to the initial position the attendant makes the resistance.

2. *Wing-loins-support-stride-standing, backward-dragging.*

3. *Wing-loins-support-walk-standing, backward-dragging.*

4. *Stretch-loins-support-stride-standing, backward-dragging.*  
—The attendant grasps the patient's wrists, after which the movement is given as in wing-loins-support-standing, backward-dragging.

5. *Rest or think-loins-support-standing, backward-dragging.*  
—The attendant grasps the patient's elbows, after which the movement is taken as in the preceding.

6. *Wing-swing-support-standing, backward-dragging.*

7. *Stretch-swing-support-standing, backward-dragging.*

8. *Wing-high-stride-knee-standing, backward-dragging with knee-support to the loins.*—As the name of the movement indicates, the attendant places one knee so as to support the loins,

and adapts his pressure to the degree of the dragging of the shoulders. Fig. 82.

During the backward-dragging the patient makes a slight resistance.

9. *Stretch-bow-low-stride-knee-standing, backward-dragging.*—The patient takes the initial position on a small cushion; behind stands the attendant, grasping the hands of the former, and gives the backward-dragging without changing the bow position. Fig. 83.

10. *Stretch - twist - bow-low-stride - knee-standing, backward-dragging.*

11. *High-ride-sitting, backward-dragging.*

12. *Stretch-high-ride-sitting, backward-dragging.*

13. *Think or rest-whole-stride-sitting, backward-dragging.*—The attendant, standing behind the patient, grasps his elbows, and drags the trunk backward under resistance of the patient; on returning to the initial position the attendant makes resistance. The patient's legs must be held during the movement.

It is evident that in these dragging movements the resistance can be done interchangeably by the attendant and patient. How far backward the dragging should take place (from a slight leaning from the perpendicular position to a horizontal posture) depends upon the initial position, and the individual ability. How many times (six to twelve) the movement ought to be repeated depends upon the condition of the patient.

These movements ordinarily have a more or less powerful effect upon the muscles of the abdomen and chest. They are used especially for chronic abdominal diseases, such as hæmorrhoids, frequent menstruation, colic, obstruction, and stomach and intestinal catarrh.

The movements with their various initial positions are quite different, and hence must be chosen with forethought according to the individual condition. The lightest of these movements stimulate digestion, circulation, and respiration, and are valuable for anæmia, chlorosis, and nervousness.

Only a few movements are found with the name "forward-dragging," since movements which operate upon the back in the same way as backward-dragging does upon the abdomen and chest, have other names.

14. *Support-standing, forward-dragging.* — The attendant stands in front of the patient, places his hands upon the patient's shoulders, and drags forward under gentle resistance from the patient. The patient returns to the initial position again under gentle resistance from the attendant. This is repeated six to twelve times. The movement assisted by the initial position tends to expand the chest. It is mainly a passive movement, but excites respiration and circulation, and is in many cases a proper movement to close with.

#### RAISING.

*Rising* is the name of movements by which the body or certain parts of it are transferred from a more or less horizontal position to a perpendicular one.

1. *Full-standing, raising.* — Two attendants, one on each side, place one hand upon the neck, and the other upon the nearest shoulder, and raise the patient, who makes resistance.

2. *Stretch-full-standing, raising.* — The movement is given as in the preceding, except that the attendants instead of grasping the shoulders grasp the wrists. The patient keeps the arms fixed in the stretch position during the movement.

These movements operate upon the muscles of the neck and back, and also upon the extensor muscles of the thighs and legs. Thus they excite those muscles which maintain the body upright, and are not tiring. Because of their general strengthening influence, they are suitable movements for the young.

3. *Reach-support-weight-leaning, back-raising.* — One attendant, standing or sitting in front of the patient, grasps the hands of the latter, and makes resistance while he rises to the perpendicular position. Fig. 84.

The raising is repeated eight to twelve times.

4. *Weight-leaning, back-raising.*

5. *Fun-weight-leaning, back-raising, wrist and loins-support.*

6. *Stretch-heel-support-standing, back-raising, wrist and neck-support.*

7. *Stretch-walk-stoop-standing, back-raising, wrist and neck-support.*—These movements have either a slight or vigorous effect upon the muscles of the back, according to the character of the initial position and the strength of the resistance.

8. *Reach-support-fall-high-knee-standing, back-raising, loins-support.*—The patient takes a backward-leaning bow position, and places his forward stretched arms upon the attendant standing in front, and raises himself to an upright knee-standing position. The movement is repeated four to six times. This movement has a laxative effect by means of its influence upon the pelvic muscles. By means of a moderate stretching of the trunk it excites the large blood vessels, and aids the movement of the blood in the veins toward the heart.

9. *Knee-sitting, raising with hips-pressure.*—The attendant, standing behind the patient, places his hands upon the patient's hips and makes proper pressure, while the patient raises himself to the knee-standing position. The movement is performed by the extensors of the hip and knee-joints by which the muscles of the back are slightly active. The movement is derivative from the abdomen.

10. *Reach-support-bow-standing, raising, axillary and interscapular-support.*—An attendant stands on each side of the patient, placing one hand forward of the axilla, and the other between the shoulders. While the patient rises, the attendants make suitable resistance upon the shoulders, and a gentle pressure between the shoulders. Fig. 85.

11. *Stretch-bow-standing, raising, interscapular-support.*—The resistance of the attendants is made upon the wrists. Otherwise the movement is similar to the foregoing. The raising should be repeated from six to twelve times.

Both of these movements have a powerful effect upon the muscles of the chest,—the latter more than the former. They are suitable for weak respiration and ordinary weakness, as with anæmia and chlorosis, also emphysema pulmonum.

12. *Stoop-stride-bow-sitting, back-raising, loins-pressure.* — One attendant on each side of the patient places one hand on the loins, and the other upon the shoulders. The patient raises himself slowly, and seeks to expand the chest, aided by the attendants, who exert a light pressure in front of the shoulders, and a more powerful pressure upon the loins. Fig. 86.

13. *Stretch-stoop-stride-sitting, back-raising, wrist and loins-pressure.*

14. *Fan-stoop-stride-sitting, back-raising, wrist and loins-pressure.*—These are really respiratory movements and are suitable for the beginning of movement treatments. Fig. 86.

15. *Reach-support-stoop-stride-sitting, backward-raising in various planes.*—The attendant stands in front of the patient, grasping his hands, and making resistance, while the latter repeatedly raises the trunk to a perpendicular position. The knees of the patient must be held in position. The movement operates upon the muscles of the back, especially those of the loins. It is suitable for rheumatism, and weakness and pain in the muscles of the back.

16. *Leg-lying, half-raising, abdomen and loins-pressure.* — Two attendants, one on each side of the patient, place one hand upon the patient's abdomen and the other upon his loins. The patient, laying his hands upon the shoulders of the attendants, raises himself to a sitting position by the aid of his arms, while the attendants press upon his abdomen and loins.

The movement operates upon the digestive organs, and is especially effective for constipation.

#### ROLLING.

Rolling, as the name signifies, is a circular movement and can be taken either actively or passively, but is most often



given passively. As a passive movement rolling should be given from twelve to thirty times.

*a.— With the Lower Extremities.*

1. *Half-lying, foot-rolling.*—The attendant seats himself at the side of the patient's foot, placing the ankle upon his knee. Then he grasps the foot about the toes by one hand, and with the other over the ankle, holds the leg in place. In the act of rolling, the foot describes a circular movement with the toes. The movement is executed alternately, several times to one side and then to the other, after which bending and stretching of the foot follow. Rolling takes place again, and the movement is closed with bending and stretching.

Foot-rolling of both feet simultaneously is executed thus: The attendant, sitting immediately in front of the patient, places the latter's feet upon his knees, the heels resting on a suitable cushion, and, grasping the toes, rolls both feet simultaneously, alternately inward and outward, and also interchanges with bending and stretching.

The first method, one foot at a time, makes the movement more localized, because the circumference of the circle is greater, and the dorsal surfaces of the feet are passively more strained. In the simultaneous rolling of both feet, some rolling takes place even in the hip-joints, together with a gentle shaking of the entire leg. In great weakness it is best to roll only one foot at a time.

Although foot-rolling is passive, it excites the blood circulation and thus brings warmth to the feet. It is used for stiffness of the ankle-joint, for cold feet, and is derivative for diseases of other organs.

When the attendant gives rolling under resistance of the patient, it becomes active, but this is inconvenient to take. On the other hand, rolling in the sitting position can be taken alone, if the patient, with partially stretched legs, the heels resting on the floor, rolls the feet alternately outward and in-

ward. Bending and stretching of the feet should be applied afterward.

Foot-rolling in this way, while one sits working at his desk, is a useful means of bringing warmth to the feet.

2. *Half-lying, stride-rolling*.—The attendant, standing by the side of the patient's bent knee, grasps with one hand the foot and the other the knee, after which he describes with the knee a circular movement outward from the median line. The movement can be alternated, and is then given from without, inward, but it ought not to exceed the median line of the body. If from one cause or another the leg cannot be rolled in the knee-bend position, the movement may be given with stretched leg, and is then called *leg-rolling*.

The movement is used for stiffness of the hip-joint, and is derivative, especially for diseases of the abdomen.

*b.—With the Upper Extremities.*

A passive finger-rolling of the joints between the fingers and the metacarpal bones is used for stiffness of the joints named. Of course it can be taken in the standing as well as the sitting position. The attendant grasps with one hand the finger and gives the movement, while the other hand holds the hand of the patient in place.

Rolling of the wrist is executed either in the standing or sitting position. With one hand the attendant grasps the patient's hand, and with the other holds his forearm; the forearm may rest on some other support. Rolling of the wrist is applied interchangeably to both sides, and the circumference should be as large as the mobility of the joint will permit.

The movement is used in connection with bending and stretching for stiffness of the joints and for cold hands. It is derivative from the chest and head. When the rolling occurs in the shoulder joint, it is called *arm-rolling*.

1. *Fan-sitting, arm-rolling*.—The attendant, standing behind the patient, grasps him immediately below the elbows, and supports him with his chest against his back. The arms

are held straight by the patient, but otherwise they rest in the attendant's hands. The rolling takes place slowly in a large circle forward, upward, and backward. The farther the arms are carried upward and backward, the more powerful is the effect of the movement upon respiration and circulation.

2. *Stretch-sitting, arm-rolling*.—The attendant, standing behind the patient, grasps his hands and renders support by placing one knee against the patient's back, and rolls his arms in a greater or less circle forward and outward.

If the arms cannot be stretched to the side or upward, the movement may occur with the arms stretched down. Arm-rolling is used for stiffness of the shoulder-joint. Fan-sitting, arm-rolling gently excites respiration and circulation, and can, if given gently, be used for heart difficulties and weak lungs. Stretch-sitting, arm-rolling is passive, although it has a stronger effect upon the chest. It is, as the former, derivative from the chest and head.

*c.—With the Trunk.*

1. *High-ride-sitting, trunk-rolling*.—One or two attendants stand behind, and with each hand grasp the patient's shoulders. The patient remains passive, while the attendant rolls the trunk in a greater or less circle, adapted to the condition of the patient, first to one side and then to the other. It can also be given in the twist position, by which it has a more powerful effect.

2. *Rest-high-ride-sitting, trunk-rolling* is given as the preceding movement. Because of the position of the arms, the effect upon the chest is greater than in the foregoing movement, but the movement requires practice in order to be taken advantageously.

3. *Loins-support-stride-standing, trunk-rolling*.—The attendant stands behind the apparatus, against which the patient leans, and gives the movement as in the ride-sitting position.

4. *Rest-loins-support-stride-standing, trunk-rolling*.—In the above trunk-rollings the swinging takes place in the upper part

of the trunk, by which the hips remain more or less immovable, but the rolling can be given with the hips, the shoulders and upper part of the trunk remaining stationary.

5. *Trunk-lying, hip-rolling*.—The patient lies on a high cot with the legs and pelvis unsupported. The attendant grasps the patient's feet, and makes such a large circular rolling with the legs that the pelvis participates in it. The rolling is given to both sides.

Trunk-rollings are generally given *passive*, but may be taken *active* by the individual or under resistance of the attendant. In the latter case they operate especially upon the abdominal muscles and also upon the muscle of the intestines, and thereby have a laxative effect.

Of course passive rollings have no real effect upon the muscles, but they operate upon the spinal cord and its membranes, upon the out-going nerves, the vertebral ligaments, and the surrounding vessels, also upon larger or smaller vessels and nerves in the abdominal and chest cavities. Rollings also have a soothing and sleep-producing influence.

The effect of rolling upon vessels consists in alternately lengthening and shortening them. This is especially noticeable in the veins and particularly the large veins. By moderate lengthening they hold more blood than in shortening, and hence movements which cause lengthening of these vessels act as a suction power upon the blood circulation toward the heart. By means of valves on the interior walls of the veins, the blood is prevented from going back, and hence the suction advances the blood toward the heart. At the joints, especially the larger ones, the membranes are in connection with the veins, by which the latter are expanded in certain movements, and a suction power arises upon the blood circulation in the direction of the heart.

By means of various initial positions the effects are modified, and the movements may be taken by both weak and strong persons.

*d.—With the Head.*

1. *Reach-support-standing, head-rolling.*—The attendant stands at the side of the patient, and places the palms of his hands, one upon the forehead and the other upon the neck, and rolls the head the same number of times to each side. Head-rolling should be given slowly.

2. *Stoop-fall-standing, head-rolling.*

3. *Sitting, head-rolling.*

4. *Fan-leg-forward-lying, head-rolling.*—The attendants stand, one on each side of the patient, and with one hand grasp the nearest arm, and place the other upon the crown of his head in order to roll the head in the manner described above. The last initial position is fatiguing and should only be given to strong persons.

Active head-rolling can be taken by the patient himself, either standing or sitting. It should be taken alternately to both sides.

Head-rolling operates upon the vessels and nerves of the neck, and also upon the cervical portion of the spinal cord, and the ligaments of the cervical vertebrae. It is derivative from the brain.

**PARTING AND CLOSING.**

These terms are employed for simultaneous movements of the legs to and from each other. The movement should be repeated from eight to sixteen times.

1. *Half-lying, legs-parting and closing.*—One attendant stands on each side of the patient's legs. Each attendant grasps the leg near the ankle and supports it with the anterior part of his thigh. The legs are separated from each other under resistance by the patient; afterward the latter closes them together under resistance of the attendants. After repetition a suitable number of times, the movement is changed so that the patient moves the stretched legs simultaneously to the sides, under resistance of the attendants, who close them again under resistance of the patient.

2. *Lying, legs-parting and closing.*
3. *Stretch-lying, legs-parting and closing.*
4. *Fan-lying, legs-parting and closing.*
5. *Short-sitting, legs-parting and closing.*
6. *Swim-hanging, legs-parting and closing.*
7. *Heave-hanging, legs-parting and closing.*

The last two positions are fatiguing, and can be used only by strong, well-trained patients.

8. *Crook-half-lying, knees-parting and closing.*—The attendant places one hand on each of the patient's knees; the parting and closing of the knees takes place in the same way as in half-lying, legs-parting and closing. In these movements the muscles of the pelvis and thighs are active, whence the effect is derivative, especially from the organs of the abdomen. In the half-lying initial position, legs-parting and closing, like knees-parting and closing, may be adapted to weak persons.

#### HEAVING.

1. *Stretch-support-standing, heaving.*—This movement can be given either with hanging ropes or suitable horizontal apparatus. Heaving with hanging ropes is given thus: The patient with stretched arms grasps the ropes and raises his body till the forearms are at right angles to the upper arms. By this the chest is thrown forward and the elbows backward. To aid the movement, an attendant can grasp with his hands the hips and assist, lifting according to the strength of the patient.

When the movement is taken with fixed apparatus, such as a heaving plank, the hands can grasp as well from as toward each other; but in both cases the arms should be perpendicular from the shoulders.

The movement tends to expand the chest and thus operates upon the respiratory and circulatory organs. When the patient is weak, the movement should be taken with the aid of an attendant in the manner above described.



2. *Swim-hanging, heaving*.—After taking the position the patient bends his arms as in heave-hanging. The attendant, who holds the feet, makes a gentle resistance during heaving. In this movement the abdomen ought to be slightly supported. Heaving is repeated six to twelve times.

The movement operates the same as the preceding, but is more straining. However by means of support to the abdomen the movement can be considerably lightened.

#### HOLDING.\*

As the name indicates, the patient halts a few seconds in the position taken.

1. *Wing-bow-leg-forward-lying (forward-lying, holding)*.—The patient rests with the anterior part of the legs upon a high cot; the remainder of the body is outside the cot in the bow position; the legs are held in place by the apparatus. An attendant stands in front of the patient and assists in taking the position. One delays a few seconds in the position, after which a bend forward (downward) is made with the head and trunk. The holding and bending are repeated interchangeably several times.

This is a powerful though by no means violent movement. All the muscles of the back come into more or less activity. The equilibrium demands equal muscular power from both sides of the back. The movement is adapted to strengthen the muscles of the back, and prevents curvature of the spine.

2. *Rest-bow-leg-forward-lying (holding)*.

3. *Stretch-bow-leg-forward-lying (holding)*.—These last two are somewhat more straining than the foregoing.

4. *Bow-side-leg-lying (side-lying, holding)*.—The position is taken as indicated. With his legs slightly bent, the patient rests in the side-lying position on the cot; the trunk extends beyond the edge of the cot in the side bow-position. The legs are fixed by the apparatus, and an attendant in front

\* *Holding* is the name of a movement which is interrupted by a delay of a few seconds of the trunk in the bow-position.

or behind the patient, assists and corrects the position. From the bow position, the trunk is lowered to a horizontal plane, in order to return to the bow position. This is repeated as often as desired.

This movement is really only used for one-sided curvature of the spine, for which one lies on the concave side. If one shoulder-blade is lower, the corresponding arm may be stretched, by which the movement becomes more powerful.

### EXTENDING.

This term is used when the arm or leg in a perpendicular position executes a movement in any direction, as outward or forward. (Thus the elbow and knee-joints are well extended in this movement.)

#### *a.—With the Lower Extremities.*

One of the legs may, in the free-standing position, be extended forward, backward, and to the side. The effect of the movement is partly upon the hip-joint, and partly derivative from the pelvic organs. The muscular work is little, since in this movement the weight of the leg is all the muscles have to overcome. When these movements are given by attendants under resistance of the patient, or *vice versa*, they receive other names.

#### *b.—With the Upper Extremities.*

1. *Standing, arms-extending side-ways.* — The arms are extended to the fan-position eight to sixteen times.

2. *Standing, arms-extending forward.* — The arms are extended forward to the reach position. The arms may also be extended upward from the side position; as:—

3. *Standing, arms-extending outward, upward.*

4. *Standing, arms-extending forward, upward.*—The movements should take place slowly. Although in these, little muscular power is needed in order to overcome the weight of the arms, their expanding effect upon the chest is very great.

They counteract the forming of a flat chest which readily results from much sitting during the period of growth. They are important even for the aged, for through their mild and stimulating effects upon respiration and circulation, they aid much in the maintenance of health. These movements may also be taken under resistance by attendants.

5. *Fan-sitting, arms-extending upward.* — The attendant stands behind the patient, and places his hands on the latter's wrists, and makes suitable resistance, while the arms are extended upward. The attendant presses the arms down to the initial position under resistance by the patient. The movement operates upon the muscles which raise the shoulders and arms. For curvature of the spine one arm only may be extended upward.

6. *Fan-stoop-stride-sitting, arms-extending forward.* — The attendant, standing in front of the patient, grasps his wrists and pulls his arms forward to the reach position, while the patient makes resistance. They are drawn back by the patient under resistance by the attendant. Fig. 87.

7. *Fan-weight-leaning, arms-extending forward.*

8. *Fan-forward-bow-leg-lying, arms-extending forward.*

9. *Fan-full-out-standing, arms-extending forward.*

10. *Fan-watch-ankle-support-standing, arms-extending forward.*

These movements, repeated six to ten times, operate upon the muscles which draw the shoulders backward, and also upon respiration and circulation. The last is a fatiguing movement, and can only be taken after practice with less severe movements.

The term *horizontal-plane-arms-bending* has also arisen.

### SWINGING.

1. *Reach-standing, arms-swinging upward.* — The arms, immovable at the elbows, are quickly swung upward to the stretch position.

2. *Fan-standing, arms-swinging upward.* — The arms are quickly swung upward to the stretch position. Both these

movements have a powerful effect upon the shoulders and chest, and may also be taken from the primary position of the arms.

#### FLYING.

This movement really consists in arm-rolling with bent arms.

*Heave-sitting, arm-flying.*—The attendant, standing behind the patient, grasps his hands and with one knee supports the patient's back, after which he rapidly describes a circle with the patient's elbows, forward, downward, backward, and upward. The movement is repeated sixteen to thirty times. The movement affects the elbow and shoulder joints, and also respiration and circulation.

#### PRESSING.

Under this term both active and passive movements are included.

##### *a.—To the Lower Extremities.*

1. *Stretch-support-half-crook-standing, knee-downward-pressing.*—The attendant places one hand upon the patient's bent knee and the other upon the small of the back, after which he presses the leg down under resistance by the patient, by which movement the leg is extended. The patient bends it again under resistance by the attendant. The movement is taken from six to ten times.

This movement acts upon the flexor muscles of the thigh and the abdominal muscles; it is derivative from the organs of the abdomen, and also affects respiration and circulation.

2. *Stretch-bow-half-crook-standing, knee-downward-pressing.*—This movement is given similarly to the foregoing and has a like effect, but is more tiring; it is also valuable for constipation.

3. *Crook-hang-standing, knee-downward-pressing.*—The patient grasps a rope with each hand, lifts himself to a heave position with the arms, and bends the legs to the crooked posi-

tion. The attendant stands at the side and places one hand upon the patient's knee and the other upon his loins, and presses the knee downward, repeating a number of times. The movement acts as the preceding, but is more powerful.

4. *Stretch-support-kick-standing, leg-downward-pressing.* — After the patient has taken the initial position and thrust the leg outward in the kick-position, the attendant grasps the small of the leg, and placing it against his thigh, presses it inward to the primary position under resistance by the patient. The movement affects powerfully the external hip muscles, and through these is derivative from the pelvic organs.

5. *Stoop-fall-reach-support-standing, leg-downward-pressing.* — The attendant stands at the side of the patient who raises one leg backward, and grasps the foot of the backward stretched leg, and presses it down under resistance by the patient. The movement is repeated six to ten times. The movement affects the extensors of the thigh and the muscles of the back, especially those in the region of the loins.

6. *High-reach-support-standing, leg-inward-pressing.\** — The attendant stands at the side of the outward extended leg and presses it inward under resistance of the patient. The leg is generally extended outward without resistance by the attendant.

7. *Stretch-support-standing, leg-inward-pressing.*

8. *Stretch-support-half-crook-standing, knee-inward-pressing.*

9. *Half-lying, leg-inward-pressing.* — The attendant grasps the outward extended leg and presses it inward under resistance of the patient. The leg is extended without resistance.

The last five movements act upon the external hip muscles and are derivative, especially from the pelvic organs.

10. *Half-crook-half-lying, knee-downward-pressing.* — The attendant places one hand forward of the patient's shoulder and the other upon the knee of the bent leg, and presses the leg downward, under resistance of the patient, to the same

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\* The term *leg-inward-pressing* presupposes that the leg is first thrust sideways. This pertains to several similar cases.

position as the other leg. The patient bends the leg again under gentle resistance by the attendant. Fig. 88.

11. *Crook-half-lying, double knee-downward-pressing.*—The attendants, one on each side of the patient, after they have grasped the proximate foot and knee, press the bent legs simultaneously and powerfully against the patient's abdomen, alternating with downward-pressing as in the former movement. Like stretch-support-standing, knee-downward-pressing, these last two movements have a strengthening effect upon the flexors of the thigh and the abdominal muscles, and by this means have a purging and derivative effect upon the abdomen.

12. *Half-kick-lying, leg-downward-pressing.*—The patient raises one foot in the stretch-position which the attendant grasps by the ankle and heel, in order to press the leg downward under resistance by the patient. This may be done six to twelve times. The movement acts similarly to the foregoing, but also involves the extensors of the lower leg.

13. *Kick-half-lying, double leg-downward-pressing.*—Both legs are in the kick-position, and are pressed downward simultaneously.

14. *Half-lying, leg-nerves-pressing.*—The attendant places one of the patient's legs on his knee, and presses upon the anterior crural nerve just below the groin, the internal popliteal nerve in the popliteal space and the external popliteal nerve against the head of the fibula. The pressure should be strong, with a gentle shaking. Afterward, pressure is made over all the leg three or four times, with extended fingers. Nerve compression is used for lameness and muscular weakness of the leg.

#### *b. — To the Upper Extremities.*

1. *Stretch-loins-support-standing, arms-downward-pressing.*—The attendant, standing behind, grasps the hands of the patient and presses his upper arms, under resistance, outward and downward to the sides, the forearms taking a bent position upward. The attendant makes resistance while the arms are again stretched upward by the patient.



2. *Stretch-walk-standing, arms-downward-pressing.*
3. *Stretch-stride-standing, arms-downward-pressing.*
4. *Stretch-sitting, arms-downward-pressing.*
5. *Stretch-step-bow-standing, arms-downward-pressing.*
6. *Stretch-fall-stride-sitting, arms-downward-pressing.*
7. *Stretch-stoop-support-standing, arms-downward-pressing.*
8. *Stretch - low - knee - stride - standing, arms - downward pressing.*
9. *Stretch-low-half-knee-standing, arms-downward-pressing.*

These arms-downward-pressing movements act upon the extensors of the arms, and also upon respiration and circulation. The various initial positions gradually increase the effects of the movements.

10. *Half-fan-sitting, arm-nerves-pressing.*—The attendant, in connection with gentle shaking, presses the following nerves of the arm: The musculo-cutaneous, on the upper part of the upper arm, the median on the upper arm, both these being under the biceps muscle; the ulnar, on the upper arm at the inner side near the elbow-joint; the radial, on the external side of the forearm, just beneath the skin. Afterward the attendant grasps the arm with the fingers slightly separated and curved, in order to make pressure from the shoulders along the whole extent of the arm three to four times. The movement is used for lameness and weakness of the arms.

#### *c. — With the Trunk.*

1. *Reach-support - standing, spinal-column - pressing.*—The attendant, with fingers slightly flexed, presses on both sides of the spinous processes of the spine. The pressure begins at the neck, and is continued down the entire spine four to six times. It is used for slight pain and tenderness of the back, and for ordinary weakness.

2. *High-ride-sitting, trunk-rolling with abdomen and loins-pressure.*—An attendant places one hand upon the patient's abdomen and the other upon his loins, and presses, while the rolling is given by another attendant.



Fig. 89.



Fig. 90.

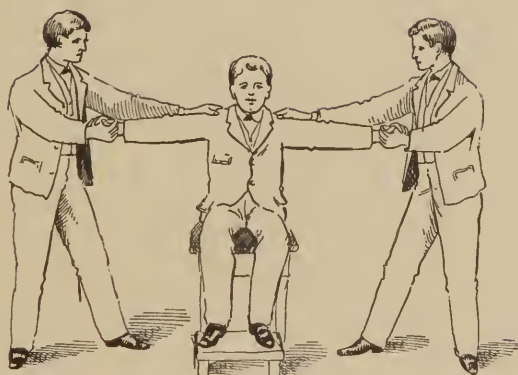


Fig. 91.



3. *High-ride-twist-sitting, trunk-rolling with abdomen and loins-pressure.* — We have before mentioned the effects of trunk-rolling upon the abdominal organs. By means of abdomen and loins-pressure the effect is greater in chronic stomach and intestinal catarrh, and also for hæmorrhoids, catarrh of the bladder, etc.

4. *Crook-stride-half-lying, with pressure on the pelvis.* — The attendant, who stands facing the patient, as the accompanying figure (89) illustrates, places the palms of his hands together, after which he makes with his fingers a pressure deep down in the pelvis.

By practice in giving this movement, the pressure may be made quite severe without the least pain. It can be given with various modifications and then has a large sphere of usefulness. The movement is used for catarrh of the bladder, menstrual disorders, leucorrhœa, hysteria, and prolapsus ani.

5. *Crook-half-lying, pylorus-pressure.* — The attendant takes a position as Fig. 89 illustrates, and presses with the finger ends on the pylorus or just between the umbilicus and ensiform appendix. It is used for cardialgia and chronic stomach catarrh.

6. *High-knee-stride-standing, backward-dragging with knee-loins-pressure.*

7. *High-knee-stride-standing, screw-twisting with knee-loins-pressure.*

These movements have been previously described.

#### d. — To the Head and Neck.

While giving certain movements, a gentle pressure on the head with the palm of the hand is often made. The pressure is made on patients who are inclined to be troubled by headache during or soon after a movement.

For facial pain, pressure is made on the place where the pain is felt, or where the nerves enter the face. For palpitation, especially nervous palpitation, pressure may be made upon the *pneumogastric* of the neck. Nerve pressure presupposes an

acquaintance with the position of the nerve, and should of course be given with the greatest care. For congestion of the brain and eyes, pressure is made upon the *vena jugularis*, but must be given by a person who thoroughly understands the nature of the disease.

#### EXPANDING.

The term *expanding* is used only for chest expanding.

1. *Stretch-support-standing, chest-expanding*.—The attendant stands behind, and places his hands between the patient's shoulders in order to press forward and upward, and thereby expand the patient's chest. The patient returns to the initial position under gentle resistance of the attendant.

2. *Heave-standing, chest-expanding* is given the same as the preceding.

3. *Stretch-sitting, chest-expanding*.—The attendant takes a place behind the patient and grasps his hands, placing his knee between the shoulders as a support. The patient's arms are carried forward, outward, and backward in a large circle under gentle resistance by the patient. By carrying the arms backward, and pressing with the knee between the shoulders the chest is expanded. This chest expanding is repeated a proper number of times (six to twelve). It is suitable for closing a treatment.

Chest-expansion causes deeper breathing and a more vigorous circulation.

#### LIFTING.

This movement only arises in connection with the trunk.

1. *Stride-sitting, chest-lifting*.—The attendant stands back of the patient on a suitable elevation, and with his hands grasps forward and under the patient's shoulders, and lifts him upward and backward, while one knee makes a gentle pressure on the loins. Fig. 90.

2. *Twist-stride-standing, chest-lifting* is given similarly to the foregoing movement.

3. *Rest-sitting, chest-lifting*.—The attendant grasps in front

of and under the *arms*, otherwise the movement is given like the foregoing. These liftings have an expanding effect upon the chest, and are suitable to use for ordinary weakness, and especially for weakness of the respiratory organs, for lung catarrh, asthma, and heart difficulties. The last movement acts more powerfully than the others. They are suitable to be given at the commencement of treatments.

#### HACKING.

Hacking can be given with the finger ends, when the fingers as well as the thumbs are in a half stretched position, by striking with a motion of the wrist that part to which the hacking is to be given. The use of the finger ends has given occasion for calling this movement *punching*. It is suitable for only those parts of the body where thin layers of soft tissue cover the bone, as the head and face.

Hacking may also be given with the ulnar edge of the hand, or, more properly, with the little finger. In this case the fingers are separated, and by means of a hasty movement of the wrist, the hacking becomes powerful.

Like passive movements in general, hacking should be given quite vigorously and continue for some time. Many have asked themselves, What can this hacking and other similar passive movements accomplish? One must remember that they are applied to a living body, which, supplied with nerves and vessels, responds to gentle pressure. By pressure upon the sensory nerves of the skin, remote organs may be influenced by reflex action, and the gymnast with a clear mind for observation will many times see from this mechanical influence surprising physiological results.

#### *a. — To the Lower Extremities.*

Hacking is not often given to the lower extremities.

*Half-lying, leg-hacking.*—The hacking is preferably given with both hands, from the upper part downward and around the leg.



The movement is used for loss of feeling and for muscular weakness of the leg.

*b. — To the Upper Extremities.*

*Half-fan-support-sitting, arm-hacking.* — Here the hacking is given simultaneously with both hands about the whole arm from the shoulder downward to the hand. It is used for muscular weakness and loss of feeling in the arms, and for rheumatism.

*c. — To the Trunk.*

*1. Reach-support-standing, back-hacking.* — The attendant, standing behind, gives the hacking preferably with both hands from the neck down to the sacrum a proper number of times (six to ten).

The term *diverging* is added if the hacking is to be given outward to the sides, in line with the lower part of the lungs.

Back-hacking is also given in various initial positions and in connection with other movements.

*2. Swim-hanging, back-hacking.* — Here the movement is given transversely from the upper part of the back downward. The movement is given with suitable support to the patient's abdomen.

*3. Stretch-stoop-stride-sitting, arm-bending and stretching, with back-hacking.* — The patient takes the movement under resistance of one attendant, while another gives the back-hacking.

Probably many consider back-hacking unimportant and of little influence as a movement, but experience shows that this is not the case. One feels relieved and comfortable after a properly given back-hacking, just as, many times, one who is exhausted may feel immediately after a meal. In neither case have new energies been received, but the organism has received an enlivening influence, and thus obtained a stimulus to new energies. Hence back-hacking is used as excit-

ing and enlivening for weakness. Hacking can be given to smaller parts of the body, and as well to the extremities as to the trunk.

*d.—To the Head.*

*Sitting, head-hacking.*—Hacking may be given to the forehead, crown, temples, and neck, and is generally given in the following manner: With the ulnar edge of the hands hacking is made over the median and transverse blood vessels, then hacking with the finger ends is given to the forehead, crown, temples, and neck. This hacking is generally followed by shaking, which is given by the attendant, who places one hand on the patient's forehead, the other upon his neck, and pulls toward the sides in opposite directions. This is done at the same time that the trunk and head are raised from forward leaning to a perpendicular position. Afterward, stroking is given to the head and down the arms.

These combined head movements are employed for headache, whether it has its seat in the scalp or within the skull, also for congestion of the brain.

#### CLAPPING.

Clapping is executed with the palms of the hands, by which it is distinguished from hacking.

*a.—To the Lower Extremities.*

1. *Half-lying, leg-clapping.*—The patient's leg lies in a stretched position, supported by the heel placed on a rest. The attendant stands at the side, and gives the clapping with both hands around the leg from the upper part downward, four to six times. It is employed for rheumatism and numb sensations.

2. *Half-lying, foot-clapping (with stick).*—The attendant places the patient's foot upon his knee, and with a suitable stick strikes the soles of the foot smartly.

It is used for sweating and coldness of the feet.

*b.—To the Upper Extremities.*

*Half-yard-support-sitting, arm-clapping.*—This clapping is given similarly to leg-clapping, with both hands, from the shoulder to the head, or *vice versa*, repeating.

It is used for rheumatism and numb sensations, and for coldness and a relaxed condition of the skin.

*c.—To the Trunk.*

1. *Stretch-support-standing, chest-clapping.*—The patient stands in the stretch-support position between two poles; the attendant stands in front, and placing his hands behind the shoulders, gives the clapping from above downward several times over the region of the lungs, after which the clapping is continued forward on the sides and anterior part of the chest. If clapping is required to only one side, then only that arm which corresponds to the side named, is stretched.

2. *Heave-standing, chest-clapping.*

3. *Yard-support-standing, chest-clapping.*—The clapping in both these positions is given as in the preceding.

4. *Standing, arm-extending with chest-clapping.*—The clapping is given the same as in stretch-support-standing, chest-clapping, while the arms are extended several times to the stretch position.

Chest-clapping is used for bronchitis, pulmonary emphysema, asthma, and general weakness.

5. *Left-stretch, left-side-bow-standing, heart-clapping.*

6. *Left-stretch, left-step-standing, heart-clapping.*—In the former initial position the patient grasps with the hand of the stretched arm a suitable appliance; in the latter initial position another attendant supports the patient with one hand under the right shoulder, the other grasping the wrist of the stretched arm. In this the patient takes the left-side-bow position. The attendant gives the clapping over the region of the heart, alternating with hacking. It is used for organic heart difficulties and nervous palpitation. Clapping is also given to other parts of the body, for rheumatism and neuralgia.

## BEATING.

Beating takes place with loosely closed hand.

1. *Reach-support-bow-stride-standing, sacrum-beating.*—The attendant places one hand on the stomach as support, and beats the sacrum from above downward repeatedly, and also at the sides to the greater trochanters.

2. *Swim-hanging, sacrum-beating.*—The movements act upon the sacral nerves and are used for disorders of the bladder and sexual organs, and also for laxity of the rectum. The latter has a more powerful and general effect.

Beating has a wide and effective use for muscular inflammation and neuralgia. The initial position must be adapted to the situation and character of the disease.

## STROKING.

Stroking is given with the palms of the hands, either directly on the skin or over the clothing. In the latter case the stroking must be considerably more powerful. Stroking affects the nerves and blood vessels.

a.—*To the Lower Extremities.*

*Half-lying, leg-stroking.*—The attendant strokes with both hands from above downward several times, and takes care that attention is given to the entire leg.

It is used for hyperæsthesia and for cramp. Stroking, given in the way directed, affects the circulation in the veins, causes an irritation to the walls of the veins, and aids especially in increasing the circulation in the superficial veins. Thus stroking can be used against a tendency to varicocele. When the stroking is given to remove effusion, waste, etc., it is given centripetally, in the direction of the circulation.

b.—*To the Upper Extremities.*

*Half-yard-support-sitting, arm-stroking.*—The stroking is given as to the lower extremities. It is more effective if it is

given immediately on the skin. It is used for hyperæsthesia and muscular twitching.

*c.—To the Trunk.*

1. *Sitting or reach-support-standing, back-stroking.*—The attendant, standing behind the patient, strokes with both hands, in alternation, from above down the spinal column.

It is used for soreness and pain in the spinal column, and also for night sweats.

2. *Stretch-sitting, arm-bending with knee-back-stroking.*—The attendant, standing behind the patient, grasps his hands, and as usual makes resistance during arm-bending, but simultaneously strokes with his knee along the spinal column from above downward. It is used for hyperæmia of the spinal column, and for night-sweats.

3. *Half-lying, loins-side-stroking.*—The attendant, facing the patient, stands astride his legs, and, placing one hand on each side under the patient's loins, strokes vigorously forward on the sides just above the crest of the ilium. By this, pressure is brought on the intestines, and especially on the ascending and descending colon; hence it is used for constipation.

4. *Stretch-support-standing, transverse abdominal-stroking.*—The attendant stands in front of the patient and with both hands strokes the entire region of the abdomen from within outward to the sides several times. Then stroking is given with one hand on the right side upward and transversely, and with the other on the left side downward in the direction of the descending colon.

5. *Stretch-support-half-lying, transverse abdominal-stroking.*—By means of stroking on the skin over the abdomen, the dermal nerves are excited; but through reflex action these strokings also affect the intestinal walls. These abdominal strokings are used for constipation, and for straining and pain in the intestines.

6. *Reach-support-stride-standing, sphincter-stroking.*—This stroking is given with a suitable instrument (staff), and

consists in stroking the muscle named with this instrument. The stroking is also combined with hacking by means of a suitable instrument. It is used for hæmorrhoids and prolapsus ani.

*d.—To the Head.*

*Sitting, head-stroking.*—Head-stroking is given to the forehead, backward over the crown and neck, and down the temples. It is generally given combined with hacking and shaking for headache, as already noted in connection with hacking.

Stroking may also be given several times over the entire body, as on the anterior and posterior parts of the trunk, and also the extremities.

It is used for irritation of the nervous system, as in hypochondria and hysteria, and also for abnormal sweating.

**SHAKING, OR VIBRATION.**

Shaking is a passive movement. When the object of shaking is to act upon small portions of the body, it can be given by the finger ends, and is called *point-shaking*. When the extremities are shaken, one or both hands may be used; and in shaking the trunk, the palms of the hands are placed where the shaking is to be given. Often the shaking is supported by apparatus, as ropes or a trapeze; or the shaking is given with specially constructed apparatus.

Shaking affects the nerves particularly, and has an enlivening and strengthening effect upon them.

*a.—To the Lower Extremities.*

*Half-lying, leg-shaking.*—The attendant grasps the ankle and heel of the patient's leg, and shakes the leg, interrupted by short pauses. It is used for weakness and feebleness of the legs.

*b.—To the Upper Extremities.*

*Yard-sitting, arm-shaking.*—The shaking may be given to either one arm at a time, or both simultaneously. The at-



tendant grasps the patient's hand and shakes the arm. The shaking is repeated after short pauses. If both arms are shaken simultaneously, support between the shoulders is necessary. Fig. 91.

It is used for weakness and feebleness of the arm. Arm-shaking also has an exciting effect upon respiration.

*c.—To the Trunk.*

1. *Half-lying, chest-lifting with shaking.*—The attendant, standing astride the patient's legs, grasps, facing him, with one hand on each side below the shoulders, and shakes his trunk while gently lifting. This shaking is renewed several (five to eight) times between short pauses.

2. *High-knee-forward-fall-standing, raising with side-chest-shaking.*—An attendant stands on each side of the patient, placing one hand forward of his shoulder and the other between the shoulders. The patient places his arms upon the attendant's shoulders and falls forward. One attendant stands in front and places the palms of his hands upon the sides of the patient's chest at the same height as the diaphragm, and shakes his chest, while the other two attendants raise him up. The raising with shaking is repeated five to eight times.

3. *Stretch-support-standing, chest-shaking.*—The attendant, standing in front of the patient, places one hand on each side of his chest at the same height as the diaphragm, and gives the shaking repeatedly (five to ten times) with short pauses.

4. *Yard-support-standing, chest-shaking.*—Chest-shaking is used for asthma, if it is of a nervous character, or caused by pulmonary emphysema, bronchitis, heart affection, or anæmia.

5. *Half-lying, loins-stroking with shaking* is given as loins-stroking with the addition of shaking. It has an enlivening effect upon both the chest and abdomen.

6. *Crook-half-lying, shaking under the left ribs.*—The attendant stands at the side of the patient, and presses his partly bent fingers under the ribs of the left side, in order to shake the stomach. The hands are moved so that the shaking em-

braces the entire left hypochondrium. The movement generally alternates with kneading and stroking over the region named. It is used for dyspepsia, chronic catarrh of the stomach, and cardialgia.

7. *Crook-half-lying, transverse abdominal-shaking*.—The movement is commonly given by two gymnasts, one on each side of the patient. Each places a hand on the abdomen above the umbilicus, and the shaking is given several times with short pauses between. It is used for intestinal catarrh and colic.

8. *Relaxed-sitting, side-shaking*.—The patient sits on a chair or high cot. Two gymnasts, one in front and the other behind, place the palms of their hands on each side of the patient above his hips, and shake by means of a quick alternate pulling of the sides. The shaking is interrupted by short pauses. The movement has an exciting and enlivening effect upon the diaphragm and lungs as well as the stomach and intestines.

9. *Crook-stride-half-lying, perineum-shaking*.—The attendant takes a suitable position relative to the initial position of the patient, and with the finger ends, the fingers being partly bent and facing each other, shakes the region of the perineum. The movement is used for prolapsus ani, etc.

#### d.—To the Head and Neck.

1. *Stoop-stride-sitting, back-raising with nose-shaking*.—The attendant, standing at the side of the patient, places one hand on his head, and with the other grasps the root of the nose with the thumb on one side and the fingers on the other side. While rising, the nose is shaken, during which the fingers glide down to the nostrils. After the shaking, hacking is given over the frontal sinus. It is used for catarrh and bleeding of the nose.

2. *Standing or sitting, larynx-shaking*.—The attendant grasps the larynx with the thumb on one side and the index and second fingers on the other, and shakes, alternating with stroking. It is used for catarrh of the larynx.

3. *Standing or sitting, pharynx-shaking*.—The attendant grasps with the thumb and fingers, as in the preceding movement, but above the larynx, and shakes the pharynx. It is used for catarrh of the pharynx.

4. *Stoop-standing, lower-jaw-shaking* is generally given thus: The attendant grasps the patient's chin, with the thumb against the teeth of the lower jaw (something soft may be placed between the thumb and the teeth), and shakes, partly up and down and partly from side to side. The shaking is alternated by lower-jaw-closing, with resistance of the attendant.

The movement is used for catarrh of the pharynx and for stiffness of the lower-jaw ligaments. It may be remarked in reference to shaking, that it ought to be given quite vigorously and continuously in order to have the proper effect. It is a tiresome movement to give, hence machines for this purpose have been used for a long time.

#### FULLING.

Fulling is given differently to various parts of the body.

##### *a.—To the Lower Extremities.*

1. *Half-lying, leg-fulling*.—The patient's legs are placed, one at a time, in such a position that the heels are supported. The attendant grasps the leg between the palms of his hands, and gives the fulling by sliding simultaneously one hand forward and the other backward. If fulling is to be given to the entire leg, a beginning is made at the feet, and the hands glide upward during the fulling. It is used for hardness of the skin and for muscular inflammation.

2. *Half-lying, knee-joint-fulling*.—Here the fulling takes place around the knee. It is used for swelling and enlargement about the knee-joint. In the same way and for the same purpose, fulling is given about the ankle-joint.

##### *b.—To the Upper Extremities.*

*Half-yard-support-sitting, arm-fulling*.—The attendant grasps the patient's arm between his hands, and gives the

fulling about the arm from the shoulder to the hand a repeated number of times. It is used for muscular inflammation of the arm.

#### SKIN-FULLING.

The attendant grasps a small fold of the skin between his fingers and fulls the surfaces against each other. This skin-fulling is used for cutaneous pain and hardness of the skin of small extent. The movement can be given in either the standing, sitting, or lying positions.

#### KNEADING.

Is employed over the abdomen and the muscles, which by their position are more accessible. Kneading is given by the fingers and also with the hands, and resembles fulling to a certain degree.

##### *a.—To the Lower Extremities.*

*Half-lying, kneading of the leg-muscles.*—The attendant sits in front of and at the side of the patient, places the leg of the latter on his knee, and with both hands kneads the different muscles and tendons toward each other from below upward, three to four times.

It is used for inflammation, weakness, and lameness of the muscles.

##### *b.—To the Upper Extremities.*

*Half-yard-support-sitting, arm-kneading.*—The attendant kneads with both hands the muscles and tendons against each other, from the hand upward, three to four times.

It is used for muscular inflammation, weakness and lameness of the muscles. For inflammation it is important to notice which muscles are inflamed. The manipulations must be vigorously given to the part named, stripped of all clothing. The most suitable position for the patient as well as the attendant, should be taken.

*c. — To the Trunk.*

1. *Crook-half-lying, abdominal-kneading.*—The attendant stands in front of the patient and kneads with both hands, with the fingers partly bent, over the entire abdomen, including the large intestines, alternating with fulling and stroking.

2. *Relaxed-stoop-standing, abdominal-kneading.*—The attendant stands behind the patient, and with both hands, the fingers being partly bent, kneads the large and small intestines. An initial position taken with precision makes it possible to exert a more powerful effect by means of this movement than by the preceding movement. Both are employed for stomach and intestinal catarrh, colic pains, clots in the portal system, and relaxation of the bowels.

Kneading and fulling are used in certain localities among the peasantry for rheumatic pains, for sprains, and for acidity of the stomach. Instinct has taught them to use these manipulations, and experience has shown them that they afford relief.

**SAWING.**

This movement is given by the ulnar edge of the hand, and is used upon the extremities with the same initial positions as are used for hacking and fulling, and like these, is used for muscular rheumatism and relaxation of the skin. Sawing may also be given to the head, back, and sides, for rheumatic pains.

Neck-sawing is often employed, generally in the sitting position. The attendant places one hand on the patient's forehead, and gives the movement with the other. The edge of the hand is moved from one side to the other, by which the skin, from the pressure, is moved from side to side over the underlying parts. It is used for rheumatic pains and neuralgia of the neck.

**RINGING.**

Ringling is given by a hasty swinging of the trunk either from side to side or forward and backward.

1. *Wing-high-ride-sitting, side-ringing*.—An attendant stands on each side of the patient, and grasps with one hand the nearest shoulder, and places the other under the opposite shoulder, after which the patient's trunk is hastily swung from side to side. After several swings a pause is made, after which the swinging is renewed. This is continued three to six times.

2. *Wing-whole-sitting, ringing (forward and backward)*.—The movement is executed by two attendants, one standing on each side of the patient. The right hand of one attendant and the left of the other are placed between the patient's arms and his trunk, and grasp each other over the patient's back, while the other hands support the neck of the patient; or the right hand of one attendant is placed within the left arm of the patient and over his back, where it grasps the left hand of the other attendant correspondingly placed. The other hands of the attendants support the patient's neck. In this way they have, as it were, the patient entirely under their control, and can give his trunk a rapid ringing forward and backward. After several ringings the movement is discontinued, but is renewed from three to four times after short pauses. The patient should in this movement, as in the preceding, be passive.

Both of these movements are used for insomnia. The former is easier to take than the latter, but does not have such a vigorous effect.



## PART II.

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### DISEASES AND THEIR TREATMENT BY MEDICAL GYMNASTICS.

In the following pages, in cases in which several prescriptions are given for a single diseased condition, the prescriptions are usually arranged in a progressive order, with reference to the increased vigor of the movements employed, beginning with the least vigorous. In beginning the treatment of a case, it will ordinarily be found best to begin with the first prescription, employing in succession the more vigorous prescriptions in their regular order, as the patient's strength improves.

In cases in which a patient is suffering from several distinct morbid conditions, it will not be proper to administer the treatment prescribed for all of these conditions at one time, nor, in most cases, on the same day. Either one of two plans may be followed: The several disorders may be treated successfully in cases in which there is no particular relation between them, or the treatment may be alternated on successive days. The latter plan will generally be found to be the better one. In some instances it will be found best to combine the treatments, using a portion of one prescription and a portion of the other; but to do this, requires much skill and experience.

#### I. ANÆMIA AND CHLOROSIS.

Although the general characteristics of this disease are quite similar in all cases, the degree of weakness and feebleness of the patients varies greatly. This and other circumstances modifying the disease must always be taken into account in giving a treatment.

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. Crook-half lying, vibration under the left ribs.
4. Fan-sitting, arm-rolling.
5. High-ride-sitting, trunk-rolling.
6. Half-lying, knee-bending and stretching.

7. Stretch-support-half-lying, transverse abdomen stroking.
8. Reach-support-standing, spinal-column-hacking.

The second and third treatments are similar to the first, except that they are a little more vigorous.

## II

1. Stoop-bow-stride-sitting, back-raising with downward resistance upon the loins.
2. Half-lying, foot-bending and stretching.
3. Sitting, alternate-twisting.
4. Stride-sitting, arm-rolling.
5. High-ride-bow-sitting, back-bending-backward.
6. Half-sitting, knee-bending and stretching.
7. Stretch-support-standing, transverse abdomen-stroking.
8. Reach-support-standing, sacrum-beating.
9. Reach-support-standing, spinal column-hacking.

## III

1. Stretch-stoop-stride-sitting, back-raising with downward resistance upon the loins.
2. High-reach-support-standing, foot-bending and stretching.
3. High-knee-stride-sitting, alternate-twisting.
4. Stretch-stoop-stride-sitting, arm-bending.
5. Half-lying, leg-outward stretching.
6. Reach-support-stoop-support-standing, back-raising.
7. Reach-support-standing, sacrum-beating.
8. Reach-support-standing, neck-bending.
9. Heave-standing, hips-alternate-twisting.
10. Stretch-support-standing, forward-dragging.

The following treatment is intended especially for young persons :—

## IV

1. Fall-standing, raising.
2. Stretch-lying, legs-parting and closing.
3. Sitting, circular-twisting.
4. Stretch-lying, foot-bending and stretching.
5. Standing, trunk-rolling (is to be taken by the patient without assistance).
6. Fan-standing, arm-rolling.
7. Crook-half-lying, abdomen-kneading.
8. Reach-support-standing, spinal-column-hacking.

The following treatment is a little more vigorous :—

## V

1. Stretch-fall-standing, raising with resistance upon the neck and wrists.
2. Sit-lying, raising with knee support.
3. Stretch-lying, legs-parting and closing.
4. Forward-lying, holding.
5. Stretch-lying, arm-bending and stretching.
6. Stretch-stride-sitting, side bending (to be taken by the patient without assistance).
7. Forward-lying, knee-bending and stretching.
8. Fall-stoop-reach-support-standing, neck-bending.
9. Standing, arm-extending outward and upward.

The following treatment has been used in cases of great weakness :—

## VI

1. Reach-support-standing, spinal-column-backing.
2. Half-lying, foot-rolling.
3. Fan-sitting, arm-shaking.
4. Half-lying, pressure of the nerves of the legs.
5. Crook-half-lying, vibration under the left ribs.
6. Reach-support-standing, sacrum-beating.
7. Half-lying, leg-shaking.
8. Reach-support-standing, pressure of the spinal nerves.
9. Sitting, head-backing.

## 2. PLETHORA.

The gymnastic treatment in this case is a combination of movements which will produce general muscular activity.

## I

1. Reach-support-standing, knee-bending with resistance upon the abdomen and loins.
2. High knee-stride-sitting, backward dragging with knee and loins-support.
3. High-reach-support-standing, foot-bending and stretching.
4. Reach-support-stoop-support-standing, back-raising.
5. Stretch-sitting, arm-rolling.
6. High-ride-sitting, trunk-rolling.
7. Stretch-support-half-lying, transverse abdomen-stroking.
8. Reach-support-standing, sacrum-beating.

9. Half-lying, legs-parting and closing.
10. Reach-support-standing, neck-bending.
11. Stretch-support-standing, hips-alternate-twisting.

The following treatments are to be used when congestion of the brain accompanies the plethora : —

## II

1. Sitting, chest-lifting.
2. Half-lying, stride-rolling.
3. High-ride-sitting, trunk-rolling.
4. Half-lying, foot-rolling.
5. Reach-support-standing, head-rolling.
6. High-knee-stride-sitting, alternate twisting.
7. Half-lying, leg-outward-stretching.
8. Reach-support-standing, sacrum-beating.
9. Fan-sitting, arm-rolling.
10. Stretch-support-half-lying, transverse abdomen-stroking.
11. Sitting, head-hacking with vibration and stroking.

## III

1. Fan-stoop-stride-sitting, back-raising with loins-resistance.
2. High-ride-twist-fall-sitting, circular-twisting with abdomen and loins-resistance.
3. Half-lying, foot-rolling.
4. Stride-sitting, arm-rolling.
5. Half-stretch-high-knee-twist-sitting, forward-twisting.
6. Half-sitting, knee-bending and stretching.
7. Reach-support-standing, sacrum-beating.
8. Stretch-support-standing, transverse abdomen-stroking.
9. Stretch-loins-support-standing, arm-downward-pressing.
10. Sitting, head-hacking with vibration and stroking.

### 3. SCROFULA.

This disease demands such muscular exercise as will stimulate digestion, respiration, and circulation. The first prescription will be found useful for young persons.

## I

1. Standing, arm-extending with chest-clapping.
2. Stretch-lying, legs-parting and closing.

3. Sitting, circular-twisting.
4. Balance-standing, knee-bending.
5. Forward-lying, holding.
6. Half-lying, foot-bending and stretching.
7. Reach-support-standing, head-rolling.
8. Stretch-lying, arm-bending and stretching.
9. Stretch-support-standing, forward-dragging.
10. Reach-support-standing, spinal-column-hacking.

The following treatment is for persons of various ages:—

## II

1. Stretch-stoop-stride-sitting, back-raising with shoulders and loins resistance.
2. Half-lying, leg-outward-stretching.
3. High-ride-sitting, trunk-rolling with abdomen and loins-resistance.
4. Stretch-sitting, arm-rolling.
5. High-knee-stride-standing, alternate-twisting.
6. High-reach-support-standing, foot-bending and stretching.
7. Lax-stoop-standing, abdomen-fulling.
8. Stretch-half-lying, arm-bending and stretching.
9. Reach-support-standing, head-rolling.
10. Reach-support-standing, sacrum-beating.
11. Reach-support-standing, spinal-column-hacking.

## III

1. Stretch-support-standing, arm-downward-pressing.
2. Half-sitting, knee-bending and stretching.
3. High-ride-twist-fall-sitting, forward-twisting.
4. Stretch-stoop-stride-sitting, arm-bending and stretching.
5. Reach-support-stoop-support-standing, back-raising.
6. Crook-half-lying, abdomen-kneading.
7. Sit-lying, raising with knee support.
8. Reach-support-standing, sacrum-beating.
9. Stoop-fall-reach-support-standing, neck-bending.
10. Stretch-support-standing, hips-alternate-twisting.
11. Stretch-sitting, chest-expanding.

### 4. DIABETES MELLITUS.

Within the past few years, several cases have been treated by gymnastics, and with good results. But when this remedy is

indicated, it should be given according to the strength of the patient. It seems only natural that gentle and suitable movements should assist in arresting the abnormal nutrition.

[The main thing to be accomplished in diabetes mellitus, aside from improving the patient's general condition, and attention to any special morbid condition which may be found to be present, such as indigestion, constipation, etc., is to give the patient a sufficient amount of exercise to oxidize the sugar which the system, unaided, is unable to consume. This can be accomplished by exercise better than by any other means. The movements should be administered with sufficient vigor to induce signs of fatigue, care being taken, however, to stop short of exhaustion. It may be necessary to administer the movements several times a day. The urine should be examined weekly, and the amount of sugar found will determine whether the movements should be increased in vigor, or may be safely diminished. Careful attention to the diet, and the employment of cold baths, in connection with the movements, are measures which must not be forgotten.]

## I

1. Reach-support-standing, spinal-column-hacking.
2. Half-lying, foot-rolling.
3. Fan-stoop-stride-sitting, arm-extending-forward.
4. High-ride-sitting, back-bending-backward.
5. Half-lying, pressure of the nerves of the legs.
6. Half-fan-sitting, pressure of the nerves of the arms.
7. Half-lying, leg-shaking.
8. Fan-sitting, arm-shaking,
9. Leg-half-lying, vibration under the left ribs.
10. Half-lying, leg-outward-stretching.
11. Stretch-sitting, arm-bending with knee-back-stroking.

## II

1. Stretch-stoop-stride-sitting, arm-bending and stretching.
2. Half-lying, foot-bending and stretching.
3. High-ride-twist-fall-sitting, forward-twisting.
4. Stretch-swing-standing, knee-bending with wrist-support.
5. Reach-support-stoop-support standing, back-raising.
6. Crook-half-lying, knees-parting and closing.
7. Half-stretch-side-step-standing, side-bending.
8. Reach-support-standing, neck-bending.
9. Sit-lying, raising with knee-support.
10. Reach-support-standing, spinal-column-hacking.



## 5. CONGESTION OF THE BRAIN.

Severe acute cases hardly come under gymnastic treatment. On the other hand, milder forms have been treated with success. The movements employed should be such as tend to draw the blood from the head.

[Proper applications of electricity, especially of galvanic currents and some hydropathic measures, with the regulation of the diet, are the principal measures to be employed in cases of cerebral congestion. Swedish movements constitute a most excellent adjunct. In many cases the cause of congestion will be found to be a disturbed condition of the abdominal sympathetic, resulting from dilatation of the stomach and disordered digestion.]

## I

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. High-ride-sitting, trunk-rolling.
4. Fan-sitting, arm-rolling.
5. Half-lying, stride-rolling.
6. Reach-support-standing, neck-bending.
7. High-reach-support-standing, foot-bending and stretching.
8. Reach-support-standing, sacrum-beating.
9. Stretch-support-standing, transverse abdomen-stroking.
10. Half-lying, knee-bending and stretching.
11. Sitting, head-hacking.

## II

1. Reach-support-standing, knee-bending with resistance upon the abdomen and loins.
2. Half-lying, stride-rolling.
3. High-ride-twist-sitting, trunk-rolling.
4. Half-lying, foot-bending and stretching.
5. Reach-support-standing, head-rolling.
6. Half-lying, leg-outward-stretching.
7. Stretch-sitting, arm-rolling.
8. Reach-support-standing, sacrum-beating.
9. Crook-half-lying, knees-parting and closing.
10. Stretch-support-standing, transverse abdomen-stroking.
11. Sitting, head-hacking with vibration and stroking.

## III

1. Reach-support-swing-standing, squatting with resistance upon the abdomen and loins.
2. Half-lying, stride-rolling.
3. High-ride-twist-fall-sitting, forward-twisting.
4. High-reach-support-standing, foot-bending and stretching.
5. Stretch-sitting, arm-rolling.
6. Fan-stoop-support-standing, back-raising with loins resistance.
7. Half-lying, foot-rolling.
8. Reach-support-standing, sacrum-beating.
9. Stretch-support-standing, transverse abdomen-stroking.
10. Stretch-support-standing, hips-alternate-twisting.
11. Sitting, head-hacking with vibration and stroking.

## 6. ANÆMIA OF THE BRAIN.

In this disease we must use stimulating and invigorating movements.

[In very severe cases in which the cerebral anæmia is the result of hemorrhage, or a protracted febrile disease in which the patient is very feeble, the treatment must at first be wholly passive in character, or nearly so. Hence, at the commencement of the treatment, the massage and passive movements should be employed before beginning the treatment designated below.]

## I

1. Half-lying, chest-lifting with shaking.
2. Half-lying, leg-shaking.
3. Sitting, head-rolling.
4. Fan-sitting, arm-shaking (both at the same time).
5. Reach-support-standing, spinal-column-hacking.
6. Sitting, head-hacking with vibration and stroking (with great care).

As the strength of the patient improves, the vigor of the movements should be increased.

## II

1. Reach-support-standing, spinal-column-hacking.
2. High-reach-support-standing, foot-bending and stretching.
3. Crook-half-lying, vibration under the left ribs.

4. High-knee-stride-standing, alternate-twisting.
5. Fan-sitting, arm-rolling.
6. High-ride-sitting, back-bending-backward.
7. Stretch-support-standing, transverse abdomen-stroking.
8. Sitting, head-hacking with vibration and stroking.

### III

1. Sitting, chest-lifting.
2. Half-lying, foot-bending and stretching.
3. High-ride-sitting, trunk-rolling with abdomen and loins-pressure.
4. Half-lying, leg-outward-stretching.
5. Fan-lying, head-rolling.
6. Crook-half-lying, knees-parting and closing.
7. Stretch-loins-support-standing, arm-pressing-downward.
8. High-knee-stride-standing, backward-dragging with knee-support to the loins.
9. Fan-stoop-stride-sitting, arm-extending-forward.
10. Sitting, head-hacking with vibration and stroking.

### 7. APOPLEXY.

The object of the treatment is twofold, to prevent another attack, and to better the present condition. Hence, the movements are not entirely confined to the lame arm or leg, but are adapted to the general condition of the body. If there is complete paralysis, passive gymnastics are employed.

[In cases in which paralysis of a limb, as well as a group of muscles, is complete, so that the patient has no control whatever of the affected part, the employment of electricity in addition to the following prescription it usually essential. In administering the movements to the affected parts, is important that the patient should be induced to exercise his volition, even when he may apparently have no control of the affected parts. A good plan is to direct the patient to move the part, and then move it for him, or assist the movement; so that he may be encouraged to believe that he executed the movement himself.]

The first prescription is for paralysis of the right arm and leg.

### I

1. Sitting, chest-lifting.
2. Half-lying, stride-rolling (both legs).
3. Sitting, right-arm-rolling.

4. Half-lying, foot-rolling (both feet).
5. Sitting, right-wrist and fingers-rolling.
6. Half-lying, right-leg-nerve-pressure.
7. Sitting, right-arm-nerve-pressure.
8. See No. 3.
9. Half-lying, right-leg-shaking.
10. Right-fan-sitting, right-arm-shaking.
11. Reach-support-standing, spinal-column-hacking.

If the paralyzed parts are at all capable of motion, or if power of motion is acquired after treatment has progressed for a time, active movements should be used.

## II

1. Sitting, chest-lifting.
2. Half-lying, stride-rolling (both legs).
3. Right-fan-sitting, right-arm-rolling.
4. Half-lying, right-foot-bending and stretching.
5. Right-fan-sitting, right-arm-nerve-pressure.
6. Half-lying, right-leg-nerve-pressure.
7. Sitting, right-arm-bending and stretching.
8. Reach-support-stoop-support-standing, back-raising.
9. Half-lying, right-knee-bending and stretching.
10. Fan-sitting, right-arm and fingers-shaking.
11. High-ride-sitting, trunk-rolling.
12. Half-lying, right-leg-shaking.
13. Reach-support-standing, spinal-column-hacking.

These patients are often troubled with constipation, and in such cases, movements for this condition should be used, as sacrum-beating, transverse abdomen-stroking, etc., according to the requirements of the individual case.

### 8. CONGESTION OF THE SPINAL CORD.

This condition may often be quickly benefited by means of suitable movements.

[It is especially important that electricity and hydropathic measures should be employed in cases of this sort, in connection with the movements. It should be understood, of course, that the prescription for the movements should not be employed until after the acute stage of the congestion has disappeared.]

## I

1. Sitting, chest-lifting.
2. Half-lying, stride-rolling.
3. Fan-sitting, arm-rolling.
4. Half-lying, foot-bending and stretching.
5. Half-lying, knee-bending and stretching.
6. Stretch-sitting, arm-bending and stretching.
7. Half-lying, leg-twisting outward and inward.
8. Stretch-support-standing, transverse abdomen-stroking.
9. See No. 1.

## II

1. Stoop-stride-sitting, back-raising with loins-resistance.
2. Half-lying, foot-rolling.
3. Sitting, alternate-twisting.
4. Half-lying, leg-outward-stretching.
5. Stretch-sitting, arm-rolling.
6. Crook-half-lying, knees-parting and closing.
7. Reach-support-standing, sacrum-beating.
8. Stretch-support-standing, transverse abdomen-stroking.
9. Stretch-support-standing, hips-alternate-twisting.
10. Reach support-standing, spinal-column-hacking.

## 9. CHRONIC INFLAMMATION OF THE SPINAL CORD.

[The employment of the constant current and proper hydropathic measures should not be omitted in cases of this sort.]

## I

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. Half-lying, stride-rolling.
4. Half-lying, leg-nerve-pressure.
5. Half-lying, knee-bending and stretching.
6. Half-lying, leg-upward-dragging.
7. Reach-support-standing, sacrum-beating.
8. Half-lying, transverse abdomen-stroking.
9. Reach-support-standing, spinal-column-hacking.

## II

1. Reach-support-standing, spinal-column-hacking.
2. Half-lying, foot bending and stretching.
3. Half-lying, stride-rolling.

4. Half-lying, transverse abdomen-stroking
5. Half-lying, leg-nerve-pressure.
6. Half-lying, leg-outward-stretching.
7. Sitting, alternate-twisting.
8. Crook-half-lying, knees-parting and closing.
9. Reach-support-standing, sacrum-beating.
10. See No. 4.
11. See No. 1

## III

1. Stoop-stride-sitting, back-raising with resistance upon the shoulders and loins.
2. Half-lying, leg-outward-stretching
3. Half-lying, leg-upward-dragging.
4. Half-lying, leg-nerve-pressure.
5. Half-lying, leg-inward-pressing.
6. Sitting, trunk-rolling.
7. Crook-half-lying, pelvis-pressing.
8. Half-lying, knee-bending and stretching.
9. Reach-support-standing, sacrum-beating.
10. Reach-support-standing, spinal-column-hacking.

## 10. TABES DORSALIS.

The movements must be suited to the weakness of the muscles and the individual condition of the patient. Great exertion is not beneficial.

[Hydropathic and electrical measures are especially important in these cases in connection with the movements.]

## I

1. Reach-support-standing, spinal-column-stroking.
2. Half-lying, leg-nerve-pressure.
3. Half-fan-sitting, arm-nerve-pressure.
4. Half-lying, leg-out-stretching.
5. Crook-half-lying, pelvis-pressing.
6. Half-lying, leg-upward-dragging.
7. Reach-support-standing, sacrum-beating.
8. Stretch-lying, transverse abdomen-stroking.
9. Half-lying, leg-shaking.
10. Reach-support-standing, spinal-column-pressing.



## II

1. Stoop-stride-sitting, back-raising with shoulders and loins-resistance.
2. Half-lying, foot-rolling.
3. Half-lying, leg-nerve-pressure.
4. Fan-stoop-stride-sitting, arm-extending-forward.
5. Half-lying, knee-bending and stretching.
6. Crook-half-lying, pelvis-pressing.
7. Crook-half-lying, knees-parting and closing.
8. Reach-support-standing, sacrum-beating.
9. Sitting, alternate-twisting.
10. Stretch-support-standing, transverse abdomen-stroking.
11. Reach-support-standing, spinal-column-stroking.

## II. FACIAL NEURALGIA.

If the neuralgia is caused by pressure somewhere upon the nerve, gymnastics can of course accomplish nothing as regards the disturbance. If it depends upon some constitutional condition, gymnastics alone will accomplish nothing. But many times facial neuralgia is caused by chlorosis, for it has often disappeared simultaneously with that disease. Under such conditions the treatment is preferably similar to that for chlorosis.

[Head and facial massage are of special value in cases of this sort. For mode of application, see "Art of Massage," Modern Medicine Pub. Co., Battle Creek, Mich.]

## I

1. Sitting, chest-lifting.
2. High-reach-support-standing, foot-bending.
3. Sitting, head-rolling.
4. Half-lying, leg-nerve-pressure.
5. Fan-sitting, arm-shaking.
6. Lax-stoop-standing, abdomen-kneading.
7. Sitting, facial-nerve-pressure (to the sore parts).
8. Reach-support-standing, spinal-column-hacking.

## II

1. Stretch-support-stride-standing, arm-downward-pressing.
2. High-ride-fall-twist-sitting, forward-twisting.
3. Half-sitting, knee-bending and stretching.

4. Reach-support-standing, head-rolling.
5. Stretch-sitting, arm-rolling.
6. High-ride-sitting, back-bending-backward.
7. High-reach-support-standing, leg-inward-pressing.
8. Sitting, facial nerve-pressure (to the sore parts).
9. Reach-support-standing, sacrum-beating.
10. Sitting, head-hacking.

## 12. MEGRIM.

[The following prescription may be used in the intervals between attacks, but should not be used while the patient is suffering an acute attack of pain. In these cases there is, almost without exception, dilatation of the stomach, prolapse of the bowels, and hyperæsthesia of the lumbar sympathetic. These conditions must be removed by a proper course of diet, and by hydropathic treatment in connection with the movements. Constipation — an almost constant accompaniment of this disease — is best relieved by the movements, which are also the best means of strengthening the abdominal muscles, thus restoring the prolapsed viscera.]

### I

1. Stoop-stride-sitting, back-raising with resistance upon the shoulders and loins.
2. Half-lying, leg-outward-stretching.
3. Fan-sitting, arm-rolling.
4. High-knee-stride-standing, backward-dragging with knee-pressing upon the loins.
5. Half-lying, kneading muscles of the leg.
6. Crook-half-lying, pelvis-pressing.
7. Half-lying, leg-inward-pressing.
8. Reach-support-standing, head-rolling.
9. Reach-support-standing, sacrum-beating.
10. Sitting, head-hacking.

### II

1. Stretch-stoop-stride-sitting, back-raising with resistance upon the shoulders and loins.
2. High-reach-support-standing, foot-bending and stretching.
3. High-ride-sitting, trunk-rolling.
4. Stretch-sitting, arm-rolling.
5. Reach-support-weight-standing, back-raising.
6. Half-lying, leg-downward-pressing.

7. Stretch-forward-leg-lying, head-rolling.
8. Half-sitting, knee-bending and stretching.
9. Reach-support-standing, hips-alternate-twisting.
10. Sitting, head-hacking.

## III

1. Fan-weight-standing, back-raising with resistance upon the wrists.
2. Half-sitting, knee-bending.
3. Think-support-standing, trunk-rolling.
4. Stretch-stoop-stride-sitting, arm-bending and stretching.
5. Half-stretch-high-ride-sitting, bow-twisting.
6. Half-lying, legs-parting and closing.
7. Stretch-forward-leg-lying, neck-bending.
8. Swim-hanging, sacrum-beating.
9. Stretch-support-standing, hips-alternate-twisting.
10. Sitting, head-hacking with vibration and stroking.

## 13. INTERCOSTAL NEURALGIA.

The object of the treatment is not only to relieve the pain, but also to improve the general health. The following prescription is adapted to neuralgia of the left side accompanied by anæmia and constipation.

[Neuralgia of the left side is often mistaken for some affection of the heart. Pain, even in the region of the heart, is rarely due to disease of that organ. Pressure upon the space between the ribs in the region of the pain, will usually show the presence of the tenderness of nerve trunks, demonstrating the disease to be superficial in character. Hot applications and applications of galvanic or faradic electricity employed in connection with the movements, greatly facilitate cure in these cases. Not infrequently there will be found tenderness at the hypogastrium and in the region of the umbilicus, as in most cases of megrim. In some cases the prescriptions given for the last named conditions, with the exception of the applications to the head, will be found useful.]

## I

1. Half-stretch-stride-twist-support-standing, forward-twisting.
2. Half-reach-support-standing, leg-backward-dragging.
3. Half-stretch-high-ride-sitting, side-bending.
4. Stretch-support-standing, leg-inward-pressing.
5. Left-stretch-support-standing, left-side-hacking.
6. Reach-support-standing, sacrum-beating.

7. Rest-high-ride-sitting, alternate-twisting.
8. Stretch-half-lying, transverse abdomen-stroking.
9. Left-stretch-support-standing, left-side-nerve-pressure.\*
10. Reach-support-standing, spinal-column-hacking.

## II

1. Stretch-bow-standing, raising with resistance upon the wrists and between the shoulders.
2. Half-stretch-knee-stride-twist-sitting, forward-twisting.
3. High-reach-support-standing, foot-bending and stretching.
4. Reach-support-weight-standing, back-raising.
5. Stretch-sitting, arm-rolling.
6. Stretch-stoop-stride-sitting, alternate-twisting.
7. Reach-support-standing, sacrum-beating.
8. Half-stretch-high-ride-twist-sitting, side-bending.
9. Stretch-support-standing, transverse abdomen-stroking.
10. Reach-support-standing, spinal-column-hacking.

## 14. SCIATICA.

If the neuralgia is caused by pressure, as from a tumor, gymnastics are not beneficial, and may cause increased pain ; but if such a cause is not present, gymnastics will prove beneficial. Neuralgia of the right leg in an otherwise healthy person may be treated by the following movements.

[Electricity in various forms and hydropathic measures are of great use in this disease. Hot applications are especially serviceable.]

1. Half-lying, right-twist-rolling.
2. Forward-lying, nerve-pressure with vigorous beating (sciatic nerve).
3. High-ride-sitting, trunk-rolling.
4. Half-lying, right-leg-upward-dragging.
5. Reach-support-weight-standing, back-raising.
6. High-reach-support-standing, right-leg-inward-pressing.
7. See No. 2.
8. Half-lying, leg-outward-stretching.
9. Reach-support-standing, sacrum-beating.
10. Half-lying, right-foot-bending and stretching.
11. Stretch-support-standing, hips-alternate-twisting.

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\* The pressure is made by the finger tips upward against the lower border of the ribs, in the interspaces where the pain is felt.

**15. CERVICO-BRACHIAL NEURALGIA.**

A case in which the pain extended to both arms, but was most acute in the lower arms, caused, it seemed, by exertion at piano playing, was treated by the following movements :—

[The local employment of heat, either moist or dry, and the applications of electricity, should not be neglected in the treatment of this disease.]

1. Stretch-stride-standing, arm-downward-pressing.
2. Sitting, alternate-twisting.
3. Half-fan-sitting, arm-clapping.
4. Fan-stoop-stride-sitting, arm-forward-extending.
5. Half-lying, leg-outward-stretching.
6. Half-fan-sitting, arm-nerve-pressure.
7. High-ride-sitting, back-bending-backward.
8. Stretch-sitting, arm-rolling.
9. Sitting, finger-shaking.
10. Half-stretch-sitting, arm-twisting outward and inward (with staff).
11. Reach-support-standing, spinal-column-backing.

If the neuralgia depends upon the disease of one or more nerves, pressure is made at those points where the nerves are most easily reached.

**16. CRURAL NEURALGIA.**

[As in all other forms of neuralgia, electrical and hydropathic measures are of great importance in the treatment of this disease. In addition to the prescription given below, local massage should be employed in all cases of this disease. For method of application, see "Art of Massage," Modern Medicine Pub. Co., Battle Creek, Mich.]

The following treatment is intended for the left leg :—

1. Half-lying, stride-rolling.
2. Half-lying, nerve-pressure (to the anterior part of the left thigh).
3. High-reach-support-standing, leg-backward-dragging.
4. Stretch-sitting, arm-rolling.
5. Half-lying, left-leg-twisting outward and inward.
6. See No. 2.
7. Half-lying, knee-bending and stretching.
8. Stretch-support-standing, hips-alternate-twisting.
9. Reach-support-standing, spinal-column-backing.

## 17. WRITERS' CRAMP.

The objects to be attained by this treatment are two ; viz., to improve the general health of the patient, and to produce a special beneficial effect upon the diseased part. For the first, such movements are used as are indicated by the condition of the person's general health ; while for the second, both passive and active movements are used, such as will promote growth and have a nutritive effect.

[Massage of the hand and arm is one of the best means of treating this disease. Directions for the best methods of manipulation will be found in "Art of Massage," by the editor.\* The application of galvanism is of great service in expediting a cure. It must be remembered, also, that writers' cramp is not always a purely local disease ; but is often, perhaps generally, simply a local expression of general disorder, the cause of which must be discovered and removed.]

1. Reach-support-standing, spinal-column-hacking.
2. Half-fan-sitting, nerve-pressure and clapping of the right arm.
3. Stretch-sitting, arm-rolling.
4. Reach-support-stoop-support-standing, raising.
5. Right-stretch-sitting, right-arm-twisting outward and inward (with staff).
6. Half-fan-sitting, muscle-kneading of the right arm.
7. High-ride-sitting, trunk-rolling.
8. Sitting, bending and stretching of the right wrist and the fingers of the right hand.
9. Stretch-instep-support-standing, knee-bending.
10. Stretch-lying, arm-bending and stretching.
11. Stretch-support-standing, hips-alternate-twisting.

## 18. ST. VITUS'S DANCE.

Movements have a great influence upon the milder forms of this disease. The treatment should be given gently, and the energy used should be carefully suited to the individual's condition.

[In addition to the movements given below, the patient should be trained daily in light calisthenics accompanied by music, and should receive the benefits of suitable hydropathic and electrical treatment.]

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## I

1. Fan-stoop-stride-sitting, arm-extending-forward.
2. Stretch-stoop-heel-support-standing, raising with resistance upon the neck.
3. Half-lying, foot-bending and stretching.
4. Climbing a rope.\*
5. Crook-half-lying, knees-parting and closing.
6. Fan-standing, arm-twisting outward and inward.
7. Half-lying, leg-outward-stretching.
8. Reach-support-standing, neck-bending.
9. Reach-support-standing, spinal-column-hacking.

## II

1. Reach-support-standing, spinal-column-hacking.
2. Stretch-lying, leg-upward-dragging.
3. Stretch-stoop-stride-sitting, arm-bending and stretching.
4. High-reach-support-standing, foot-bending and stretching.
5. Forward-lying, holding.
6. Half-sitting, knee-bending and stretching.
7. Climbing a pole.\*
8. Half-lying, legs-parting and closing.
9. Forward-stoop-fall-reach-support-standing, neck-bending.
10. Stretch-support-standing, hips-alternate-twisting.

## 19. EPILEPSY.

There is no special treatment given for this disease, except that the movements should be suited to the condition of the general health. However, one should observe that the movements given are derivative from the head.

[The majority of cases of this class suffer from disorders of digestion, dilatation of the stomach, and constipation. There is generally found a sensitive condition of the pneumogastric nerve. The prescriptions for

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\*Climbing ropes or poles is a well-known movement in vigorous gymnastics. With stretched arms, the hands, one above the other, grasp the rope (or pole); at the same time the feet clutch the rope, the knees being bent. By means of bending the arms and extending the knees, the body is raised. This is repeated, the lower hand and foot alternately passing above. The movement requires the united action of a large number of muscles, and can be a real proof of the improvement of the patient, provided the movement can be executed. The patient must be carefully watched that he does not fall in case the cramp prevents a sure grasp.

megrim will be applicable in nearly all these cases. Recent operations made by French physicians show that there is in many cases some affinity between this disorder and megrim. The observations made are, of course, not applicable to Jacksonian epilepsy, which has been clearly proven to be due to localized disease in the cerebral cortex, as idiopathic epilepsy is doubtless due, in a large part, at least, to general disorders of the nutrition, the prominent feature of which is an accumulation of morbid products in the blood, muscles, and other tissues. Careful attention to diet, abundant exercise in the open air, and vigorous eliminative treatment, are measures of primary importance in the treatment of all cases of this sort.]

## I

1. Sitting, chest-lifting.
2. High-reach-support-standing, foot-bending.
3. Sitting, head-rolling.
4. Reach-support-stoop-support-standing, back-raising.
5. Fan-sitting, arm-rolling.
6. Half-lying, leg-out-stretching.
7. Forward-stoop-fall-reach-support-standing, neck-bending.
8. High-ride-twist-sitting, trunk-rolling.
9. High-reach-support-standing, leg-inward-pressing.
10. Sitting, neck-sawing.
11. Reach-support-standing, spinal-column-hacking.

## II

1. Stretch-stoop-stride-sitting, arm-bending and stretching.
2. High-ride-twist-backward-fall-sitting, forward-twisting.
3. Half-lying, leg-out-stretching.
4. Reach-support-forward-fall-high-knee-standing, raising with resistance upon the hips.
5. Stretch-support-side-bow-standing, leg-inward-pressing.
6. Stretch-leg-forward-lying, neck-bending.
7. Half-lying, foot-bending and stretching.
8. High-ride-twist-sitting, trunk-rolling with pressure upon the abdomen and loins.
9. Half-stretch-side-step-standing, side-bending.
10. Sitting, neck-sawing.

## 20. CRAMP OF THE EXTREMITIES.

It often happens that persons of different ages are troubled with cramp in various groups of muscles, such cramp not being

caused by disease in the brain or the spinal column, and post-mortem examination showing no anatomical change in the motor nerves. This cramp has been called by some authors, idiopathic. Sometimes it seems to have a connection with muscular rheumatism. In some cases it has come on after a weakening disease, or after muscular exertion. The following treatment was used for a person suffering with cramp of the lower extremities, for which there was no known cause. The cramp disappeared after three weeks' treatment.

[Motion of the affected parts, bandaging, and applications of a constant current, are measures of great value in cases of this sort, in connection with the movements.]

1. Half-lying, stride-rolling.
2. Half-lying, leg-shaking.
3. Half-lying, foot-bending and stretching.
4. Forward-lying, holding.
5. Half-lying, leg-nerve-pressing.
6. Half-lying, leg-out-stretching.
7. Sit-lying, raising with knee-support.
8. Half-lying, leg-upward-dragging.
9. Reach-support-standing, sacrum-beating.
10. Crook-half-lying, knees-parting and closing.
11. Stretch-sitting, arm-bending and stretching.
12. Reach-support-standing, spinal-column-hacking.

## 21. SHAKING PALSY.

1. Sitting, chest-lifting.
2. Half-lying, foot-bending and stretching.
3. Half-fan-sitting, arm-nerve-pressing.
4. Half-lying, leg-out-stretching.
5. Sitting, head-twisting.
6. Sitting, arm-twisting outward and inward (with staff).
7. High-ride-sitting, back-bending-backward.
8. Sitting, forearm and hand-bending and stretching.
9. Reach-support-standing, neck-bending.
10. High-knee-stride-sitting, alternate-twisting.
11. Reach-support-standing, spinal-column-hacking.

## 22. HYPOCHONDRIA.

In the hypochondriac, one often finds greater or less disorder of the alimentary canal. In such cases the movements should be given especially to benefit this condition. If any specific morbid conditions are found, the movements should be given with reference to these ; but ordinarily they should tend to cause general muscular activity, in order to have a derivative effect both physical and psychical.

[In cases of hypochondria in which the patient has been greatly exhausted physically or mentally, the movements must be administered with great care, especially at the beginning. The patient should never be allowed to become greatly fatigued. In cases in which there has been too little activity of mind and body, a considerable degree of fatigue is beneficial. Warm baths will be found of great value in connection with the movements given.]

## I

1. Reach-support-standing, knee-bending with resistance upon the abdomen and loins.
2. Half-lying, stride-rolling.
3. High-knee-stride-standing, backward-dragging with knee-support to the loins.
4. Crook-half-lying, vibration under the left ribs.
5. High-reach-support-standing, foot-bending and stretching.
6. High-ride-forward-fall-twist-sitting, forward-twisting.
7. Reach-support-standing, sacrum-beating.
8. Stride-sitting, arm-rolling.
9. Stretch-support-standing, transverse abdomen-stroking.
10. Stretch-support-standing, chest-expanding.

## II

1. Reach-support-swing-standing, knee-bending with resistance upon the abdomen and loins.
2. High-reach-support-standing, leg-backward-dragging.
3. Lying, half-raising with abdomen and loins-support.
4. Half-sitting, knee-bending and stretching.
5. High-ride-sitting, circular-twisting with abdomen and loins-pressing.
6. Half-lying, legs-parting and closing.
7. Lax-sitting, side-shaking.
8. Reach-support-stoop-support-standing, back-raising.

9. Crook-half-lying, abdomen-kneading.
10. Stretch-support-standing, hips-alternate-twisting.
11. Reach-support-standing, spinal-column-hacking.

### 23. HYSTERIA.

[In the majority of these cases there will be found ovarian or uterine diseases, or visceral displacements, which must receive careful and specific treatment.]

#### I

1. Reach-support-standing, spinal-column-stroking.
2. Half-lying, foot-rolling.
3. Crook-half-lying, epigastrium-vibration.
4. Half-lying, leg-stroking.
5. Half-fan-sitting, arm-stroking.
6. Reach-support-standing, sacrum-beating.
7. Crook-half-lying, pelvis-pressing.
8. Reach-support-standing, spinal-column-hacking.

After three or four weeks the following treatment is prescribed : —

#### II

1. Sitting, chest-lifting.
2. High-reach-support-standing, foot-bending and stretching.
3. Stoop-standing, abdomen-kneading.
4. Half-stretch-high-knee-stride-twist-sitting, forward-twisting.
5. Half-lying, leg-outward-stretching.
6. Reach-support-stoop-support-standing, raising.
7. Stretch-sitting, arm-bending and stretching.
8. Crook-half-lying, pelvis-pressing.
9. Crook-half-lying, knees-parting and closing.
10. Reach-support-standing, sacrum-beating.
11. Heave-standing, hips-alternate-twisting.

#### III

1. Stretch-stoop-stride-sitting, back-raising with resistance upon the loins.
2. Half-fan-sitting, arm-nerve-pressing.
3. Reach-support-fall-high-knee-standing, back-raising with resistance upon the loins.
4. Half-lying, leg-nerve-pressing.
5. Crook-half-lying, epigastrium-pressing.
6. Stretch-swing-standing, knee-bending with support to the hands.

7. Reach-support-stoop-standing, hips-alternate-twisting.
8. Stretch-stoop-stride-sitting, arm-bending and stretching.
9. Reach-support-standing, sacrum-beating.
10. Crook-half-lying, pelvis-pressing.
11. Reach-support-standing, spinal-column-pressing.

This is a disease which requires of the patient great perseverance with the gymnastic treatment. Energetic and suitable movements, if continued the necessary time, are one of the most potent remedies for this obstinate disease.

#### 24. CHRONIC NASAL CATARRH.

[It must not be expected that a radical cure of local diseases will be effected by movements alone ; specific local treatment must be administered in addition.]

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. Stoop-stride-sitting, back-raising with nose-vibration.
4. High-ride-sitting, trunk-rolling.
5. Half-lying, stride-rolling.
6. See No. 3.
7. Fan-sitting, arm-rolling.
8. Half-lying, leg-out-stretching.
9. Sitting, head-rolling.
10. See No. 3.
11. Stretch-support-standing, hips-alternate-twisting.
12. Stretch-support-standing, forward-dragging.

#### 25. HYPERTROPHY OF THE HEART.

[In addition to the employment of the prescriptions indicated below, the patient should be made to remain in a horizontal position a greater part of the time. All violent exercise, and in extreme cases, walking or standing, must be carefully avoided until all symptoms of excess heart action have disappeared.]

##### I

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. Fan-sitting, arm-rolling.
4. Half-lying, leg-out-stretching.
5. Left-stretch-left-side-bow-standing, heart-clapping.
6. High-knee-stride-standing, backward-dragging with knee-support to the loins.



7. Crook-half-lying, knees-parting and closing.
8. High-ride-sitting, trunk-rolling.
9. High-reach-support-standing, foot-bending and stretching.
10. Stretch-support-standing, forward-dragging.

Chest-lifting, arm-rolling, and forward-dragging are respiratory movements, and tend to expand the chest, thus facilitating the circulation. The movements of the legs are for the purpose of accelerating the circulation.

## II

1. Fan-stoop-stride-sitting, back-raising with loins-resistance.
2. Rest-high-knee-stride-standing, alternate-twisting.
3. Stretch-swing standing, knee-bending with hand-support.
4. Left-stretch-left-side-bow-standing, heart-clapping.
5. Fan-stoop-support-standing, back-raising with loins-resistance.
6. Stretch-sitting, arm-rolling.
7. Stretch-support-standing, hips-alternate-twisting.
8. Stretch-support-standing, arm-downward-pressing.
9. Half-stretch-high-ride-sitting, side-bending.
10. Stretch-sitting, chest-expanding.
11. Reach-support-standing, spinal-column-hacking.

If any other disease is present, it should, of course, receive due consideration in giving the gymnastic treatment. In order to obtain the desired effect, the medical gymnastics must be continued for some time. The movements may be variously modified, but vigorous active movements, especially arm movements which require exertion, should on no account be used. Experience shows that in this form of heart difficulty, gentle active movements may be used with advantage, provided they are given in easy initial positions and with suitable degrees of resistance.

### 26. DILATATION OF THE HEART.

Appropriate gymnastics have a beneficial influence in lessening the often distressing symptoms of this disease. The object of the gymnastics is to promote the circulation and relieve congestion.

[General massage and revulsive applications to the spine should always be employed in these cases. Great care should be taken to avoid fatiguing the patient by the application of treatment in too vigorous a manner.]

## I

1. Half-lying, chest-lifting with vibration.
2. Half-lying, foot-rolling.
3. Sitting, forearm, hand, and finger-bending and stretching.
4. Half-lying, stride-rolling.
5. High-reach-support-standing, foot-bending and stretching.
6. Fan-sitting, arm-rolling.
7. Left-stretch-left-side-bow-standing, heart-clapping.
8. Reach-support-standing, spinal-column-hacking.

After each movement give standing, chest-lifting.

## II

1. Stoop-stride-sitting, back-raising with resistance upon the shoulders and hips.
2. Half-lying, foot-rolling.
3. Left-stretch-left-side-bow-standing, heart-clapping.
4. Half-lying, leg-out-stretching.
5. High-ride-sitting, trunk-rolling.
6. Fan-sitting, arm-rolling.
7. Crook-half-lying, knees-parting and closing.
8. High-reach-support-standing, foot-bending and stretching.
9. Sitting, forearm, hand, and finger-bending and stretching.
10. Half-lying, chest-lifting with vibration.

After each movement give standing, arms-extending.

## 27. FATTY DEGENERATION OF THE HEART.

In this disease of the heart one generally finds a considerable degree of weakness. Hence only the gentlest movements should be used. They should be selected with great care, and given by an experienced hand. The difficulty in these cases lies in the inability of the heart to give sufficient impetus to the circulation. Hence it follows of necessity that movements which tend to strengthen the heart, and which are properly adapted to the strength of the patient, must have a beneficial effect.

[Carefully graduated gymnastics, progressively increasing in vigor, should be employed with the movements in cases of this sort.]

1. Half-lying, chest-lifting with vibration.
2. Half-lying, foot-rolling.
3. Half-lying, hand and finger-bending.
4. Half-lying, stride-rolling.
5. Half-lying, hips-lifting with stroking.
6. High-ride-sitting, trunk-rolling.
7. Half-lying, leg-shaking.
8. Left-stretch-left-side-bow-standing, heart-clapping.
9. Reach-support-standing, spinal-column-hacking.

After each movement give sitting, chest-lifting.

## 28. VALVULAR DISEASE OF THE HEART.

[In the application of the movements in these cases, great care should be taken to avoid undue breathlessness. In cases in which dropsy is present, massage should be employed in connection with the movements; and in some cases, eliminative baths may also be used, care being taken to avoid over-heating the patient. The Russian bath should not be given. The vapor bath or the electric light bath are the most suitable means for producing diaphoresis.]

### *a.—Mitral Insufficiency.*

#### I

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. Left-stretch-support-side-bow-standing, heart-clapping.
4. High ride-sitting, trunk-rolling.
5. Half-lying, stride-rolling.
6. Sitting, forearm, hand, and finger-bending and stretching.
7. Crook-half-lying, vibration under the left ribs.
8. Half-lying, chest-lifting with vibration.

After each movement give sitting, chest-lifting.

#### II

1. Reach-support-standing, spinal-column-hacking.
2. High-reach-support-standing, foot-bending and stretching.
3. Left-stretch-support-side-bow-standing, heart-clapping.
4. High-knee-stride-standing, backward-dragging with knee-support to the loins.

5. Half-lying, stride-rolling.
6. Fan-sitting, arm-rolling.
7. High-ride-sitting, trunk-rolling with resistance upon abdomen and loins.
8. Half-lying, leg-out-stretching.
9. Sitting, fore-arm, hand, and finger-bending and stretching.
10. Sitting, chest-lifting.

After each movement give sitting, arms-extending.

*b.—Semilunar Insufficiency.*

I

1. Half-lying, stride-rolling.
2. Left-stretch-support-side-bow-standing, heart-clapping.
3. Half-lying, foot-rolling.
4. High ride-sitting, trunk-rolling.
5. See No. 2.
6. Half lying, leg-out-stretching.
7. Fan-sitting, arm-rolling.
8. Reach-support-standing, spinal-column-hacking.

After each movement give standing, chest-lifting.

II

1. Reach-support-standing, spinal-column-hacking.
2. Half-lying, foot-bending and stretching.
3. Left-stretch side-bow-standing, heart-hacking.
4. High-knee-stride-standing, backward dragging with knee-support to the loins.
5. Half-lying, knee-bending and stretching.
6. Stride-sitting, arm-rolling.
7. Sitting, alternate-twisting.
8. Crook-half-lying, knees-parting and closing.
9. Stretch-support-standing, forward-dragging.

After each movement give standing, arms-extending ( gently ).

III

1. Fan-stoop-support-standing, back-raising with resistance to the hands and loins.
2. High-reach-support-standing, foot-bending and stretching.
3. Left-stretch-support-side-bow-standing, heart-clapping.

4. High-knee-stride-standing, alternate-twisting.
5. Half-sitting, knee-bending and stretching.
6. High-ride-sitting, back-bending-backward.
7. Fan-sitting, arm-rolling.
8. Crook-half-lying, vibration under the left ribs.
9. Half-lying, leg-twisting outward and inward.
10. Reach-support-standing, spinal-column-hacking.

After each movement give standing, arms-extending.

If we consider the treatments for the various diseases of the heart, we will see that, although various movements are given, one and the same principle obtains in all movements for heart troubles. The object of the gymnastic treatment is to relieve the circulation without increasing the work of the heart. Only passive and gentle active movements can accomplish this.

The same movements are demanded where the strength of the heart has been diminished. The resistance that the circulation of the blood gives the heart is too great in proportion to its strength, and in consequence this organ becomes still more weakened. The venous congestion tends to bring on various serious diseases, and the treatment must here also consist in relieving the circulation. The comprehension of this one condition gives the physician a certain and sure foundation in the treatment of heart difficulties. It is well known that violent movements increase the heart work, and these must be avoided if one wishes to relieve the heart affection.

#### 29. NERVOUS PALPITATION OF THE HEART.

At the beginning of the treatment, one must consider the condition of the general health of the patient. The following movements have been used with advantage.

[In the majority of these cases the palpitation is due to an irritated state of the abdominal sympathetic, the lumbar ganglia, of the solar-plexus, and the relief will only be found when the dietetic errors of the patient have been corrected, and the condition of the stomach improved. For this purpose it will be found advantageous to employ the prescriptions for stomach disorders, which see.]

## I

1. Reach-support-standing, spinal-column-stroking.
2. Half-lying, foot-rolling.
3. Left-stretch-support-side-bow-standing, heart-clapping.
4. Sitting, alternate-twisting.
5. Half-lying, stride-rolling.
6. Half-lying, chest-lifting with vibration.
7. Sitting, fore-arm, hand, and finger-bending and stretching.
8. Stretch-support-standing, forward-dragging.

## II

1. Reach-support-standing, spinal-column-hacking.
2. High-reach-support-standing, foot-bending and stretching.
3. High-knee-stride-standing, alternate-twisting.
4. Left-stretch-support-side-bow-standing, heart-clapping.
5. High-ride-sitting, back-bending-backward.
6. Half-lying, leg-out-stretching.
7. Stretch-sitting, arm-rolling.
8. Crook-half-lying, vibration under the left ribs.
9. Heave-standing, hips-alternate-twisting.

## III

1. Stretch-support-stride-standing, arm-downward-pressing.
2. Half-lying, foot-bending and stretching.
3. Left-stretch-support-side-bow-standing, heart-clapping.
4. High-ride-twist-fall-sitting, forward-twisting.
5. Half-sitting, knee-bending and stretching.
6. Half-stretch-high-ride-sitting, side-bending.
7. High-reach-support-standing, leg-inward-pressing.
8. Lax-stoop-standing, abdomen-kneading.
9. Reach-support-stoop-support-standing, back-raising.
10. Stretch-sitting, arm-bending with knee-back-stroking.

## 30. ANGINA PECTORIS.

The influence of movements upon this disease depends upon the cause of the trouble. If incurable organic changes have taken place in the heart, which bring on, or aid in bringing on, the attack, gymnastics can at least lessen these attacks by improving the general health of the person.



[Pain in the region of the heart is due in a large proportion of cases to a disturbance in the hyperæsthetic condition of the abdominal sympathetic nerve. The disturbance in reference to the sympathetic is usually due to dilatation of the stomach and consequent disorders of digestion resulting in peripheral irritation, which, reacting upon the abdominal centers and reflexively affecting the spinal center, thus gives rise to intercostal neuralgia. This, when located in the region of the heart, is very likely to be mistaken for true angina pectoris. These cases may usually be cured by the employment of movements calculated to remove the causes of the affection.]

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. Half-lying, chest-lifting with vibration.
4. Sitting, fore-arm, hand, and finger-bending and stretching.
5. Left-stretch-support-side-bow-standing, heart-clapping.
6. Half-lying, stride-rolling.
7. Crook-half-lying, vibration under the left ribs.
8. Sitting, alternate-twisting.
9. See No. 5.
10. Reach-support-standing, spinal-column hacking.

### 31. VARIX.

Gymnastics cannot cure varix if the veins are already dilated, but the object is to prevent further dilatation. Stretching and contracting the muscles has an influence on the circulation of the blood in the veins, and it is evident that gymnastics can in this way have a beneficial influence. The following treatment has been used for varix of the lower extremities.

1. Reach-support-instep-support-standing, knee-bending with resistance upon the abdomen and loins.
2. Half-lying, stride-rolling.
3. Instep-support-standing, backward-dragging.
4. Half-lying, leg-out-stretching.
5. High-ride-twist-standing, circular-twisting.
6. Half-lying, leg-stroking.
7. Stretch-sitting, arm-rolling.
8. Half-lying, leg-upward-dragging.
9. Reach-support-stoop-support-standing, back-raising.
10. See No. 6.
11. High-reach-support-standing, foot-bending and stretching.
12. Stretch-support-standing, hips-alternate-twisting.

## 32. CATARRH OF THE LARYNX.

[In these cases it is, of course, necessary to employ proper local treatment by means of the nebulizer, together with suitable hydropathic measures, in addition to the movements.]

## I

1. Fan-sitting, arm-rolling.
2. Half-lying, foot-rolling.
3. Standing, larynx-vibration.
4. Half-lying, leg-out-stretching.
5. Reach-support-standing, neck-bending.
6. High-ride-sitting, trunk-rolling.
7. See No. 3.
8. Crook-half-lying, knees-parting and closing.
9. See No. 3.
10. Stretch-support-standing, forward-dragging.

## II

1. Stoop-stride-sitting, back-raising with resistance to the shoulders and loins.
2. High-reach-support-standing, foot-bending and stretching.
3. Standing, larynx-vibration.
4. Stretch-sitting, arm-rolling.
5. Half-stretch-high-ride-twist-sitting, side-bending.
6. Half-sitting, knee-bending and stretching.
7. See No. 3.
8. Sitting, head-rolling.
9. High-reach-support-standing, leg-inward-pressing.
10. Stretch-support-standing, hips-alternate-twisting.
11. Stretch-support-standing, chest-expanding.

## 33. CATARRH OF THE LUNGS.

Through muscular exertion, the elimination of the skin is increased; and through the influence of the movements upon the digestive organs, a derivative effect upon the lungs is accomplished.

[Suitable medicated solutions, and proper hydropathic measures, especially to the chest and back, should be employed in connection with the

movements in these cases. In many cases it is necessary for the patient to be placed in a medicated atmosphere for a few hours each day. In the majority of cases, change of climate is essential for radical cure.]

## I

1. Reach-support-standing, knee-bending with abdomen and loins-resistance.
2. High-reach-support-standing, foot-bending and stretching.
3. Rest-standing, chest-clapping.
4. High-reach-support-standing, leg-backward-dragging.
5. High-ride-sitting, back-bending-backward.
6. See No. 3.
7. Reach-support-standing, sacrum-beating.
8. Fan-sitting, arm-rolling.
9. High-knee-stride-standing, alternate-twisting.
10. Stretch-support standing, transverse abdomen-stroking.
11. Stretch-support-standing, chest-clapping.

## II

1. Reach-support-instep-support-standing, knee-bending with abdomen and loins-resistance.
2. High-ride-backward-fall-twist-sitting, forward-twisting.
3. Half-lying, foot-bending and stretching.
4. Standing, arms-extending with chest-clapping.
5. Reach-support-stoop-support-standing, back-raising.
6. Half-sitting, knee-bending and stretching.
7. Stretch-sitting, arm-rolling.
8. Stoop-standing, abdomen-fulling.
9. Stretch-support-standing, hips-alternate-twisting.
10. Stretch-support-standing, chest-clapping.

## 34. CONGESTION OF THE LUNGS.

It is only in cases of light attacks that movements have a rapid and successful influence.

[Application of heat to the spine and cold over the anterior portion of the chest is of great advantage in cases of this kind. Movements can be employed advantageously in slight chronic cases of this character.]

1. Rest-sitting, chest-lifting.
2. Half-lying, stride-rolling.
3. Half-lying, chest-lifting with vibration.

4. Half-lying, foot-rolling.
5. Stretch-support-standing, chest-vibration.
6. High-ride-sitting, trunk-rolling with abdomen and loins-resistance.
7. Fan-sitting, arm-rolling.
8. Reach-support-standing, sacrum-beating.
9. Stretch-support-half-lying, abdomen-stroking.
10. Stretch-support-standing, forward-dragging.

### 35. EMPHYSEMA OF THE LUNGS.

To give again to the injured air-cells their tone, or to replace the disturbed capillary vessels, lies, of course, outside of the possibility of gymnastic treatment. But experience shows that movements may bring alleviation and help, if not in the most severe cases, at least in the milder ones. The fact that disorders of the organs of digestion aggravate this condition of the lungs, is an indication for the use of the movements. It has sometimes been noticed that movements for the benefit of the organs of digestion, have alleviated the symptoms of the disease. The explanation of this effect may be found in the movements made in breathing. The contraction of the diaphragm in inspiration increases the chest cavity in a vertical direction. Emphysema of the lungs affects particularly the ventral and upper parts of the lungs, and causes these parts to become more or less incapacitated for breathing. If there are disorders in the stomach and intestines which hinder the mobility of the diaphragm, the evil already existing will be greatly aggravated.

The principal object in the use of these gymnastic movements is to secure improvement in the condition of the lungs by improvement of the organs of digestion ; or, if such disorders are not present, to maintain the normal condition. The influence upon the circulatory organs is to overcome or lessen the disturbed condition of the circulation. The direct effect upon the lungs tends partly to counteract the flaccidity of the intercostal muscles caused by the disease, and partly to render the breathing more easy. This is accomplished by producing

an invigorating effect upon the possibly weakened, but not destroyed, air-cells, and also by assisting the healthy parts of the lungs in breathing.

[Treatment by means of pneumatic apparatus, regulation of the diet, and the use of medicated atmospheres or nebulized solutions, should not be neglected in suitable cases.]

## I

1. Reach-support-bow-standing, raising with axillary and interscapular-resistance.
2. Half-lying, foot-rolling.
3. Half-lying, chest-lifting with vibration.
4. High-ride-sitting, screw-twisting.
5. Crook-half-lying, vibration under the left ribs.
6. See No. 3.
7. See No. 4.
8. Crook-half lying, abdomen-vibration.
9. Heave-standing, chest-clapping.
10. Reach-support-standing, spinal-column-hacking.

## II

1. Half-stretch-half-reach-support-twist-standing, forward-twisting.
2. Half-lying, stride-rolling.
3. Stretch-support-standing, side-pressing with vibration.
4. High-ride-sitting, screw-twisting.
5. High-reach-support-standing, foot-bending and stretching.
6. Reach-support-stoop-support-standing, back-raising.
7. Lax-stoop-standing, abdomen-kneading.
8. Half-lying, kneec-bending and stretching.
9. Lax-sitting, side-shaking.
10. Stretch-support-standing, chest-clapping.

## III

1. Stretch-bow-standing, raising with wrist and interscapular resistance.
2. Half-lying, legs-parting and closing.
3. High-knee-forward-fall-standing, raising with side and chest-vibration.
4. Half-lying, leg-out-stretching.
5. High-ride-sitting, trunk-rolling with abdomen and loins-resistance.
6. Fan-stoop-stride-sitting, arms-extending forward.
7. Sit-lying, raising with knee-support.
8. High-ride-sitting, screw-twisting.

9. Stretch-support-standing, hips-alternate-twisting.
10. Stretch-support-standing, chest-clapping.

### 36. CHEST CRAMP.

#### I

1. Half-lying, chest-lifting with vibration.
2. High-knee-stride-standing, circular-twisting.
3. Standing, arm-extending with chest-clapping.
4. Half-lying, stride-rolling.
5. Lax-sitting, side-vibration.
6. Fan-sitting, arm-rolling.
7. Standing, larynx-vibration.
8. Stretch-support-standing, side-pressing with vibration.
9. Reach-support-standing, spinal-column-hacking.

#### II

1. Sitting, chest-lifting.
2. Crook-half-lying, knee-pressing-upward.
3. Reach-support-standing, head-rolling.
4. Crook-half-lying, vibration under the left ribs.
5. High-reach-support-standing, foot-bending and stretching.
6. Half-stretch-high-ride-sitting, bow-twisting.
7. Standing, larynx-vibration.
8. High-knee-forward-fall-standing, raising with side and chest vibration.
9. Stretch-support-standing, leg-out-stretching.
10. Fan-support-standing, chest-clapping.

#### III

1. Stretch-stoop-stride-sitting, back-raising with resistance upon the hands and loins.
2. Half-stretch-high-knee-stride-twist-standing, forward-twisting.
3. Half-sitting, knee bending and stretching.
4. Stretch-stoop-stride-sitting, alternate-twisting.
5. High-ride-twist-sitting, trunk-rolling.
6. Swim-hanging, neck-bending.
7. Half-stretch-side-step-standing, side-bending.
8. Stretch-sitting, arm-rolling.
9. Stretch-support-standing, hips-alternate-twisting.
10. Fan-support-standing, chest-clapping.

The attack of the cramp has several times been shortened by means of pressing the phrenic nerve.

## 37. HÆMORRHAGE FROM THE LUNGS.

Gymnastics can easily do harm in pulmonary hæmorrhage. Hence it is important to understand under what conditions movements may be used, and how they should be given in order to secure the best results. During the bleeding, quiet is absolutely necessary. If movements are to be given, only a few passive movements of the legs should be used. Avoid all movements that have a direct effect upon the chest, such as chest-lifting, clapping, and vibration. The initial positions should be those of rest and the movements gentle.

[Heat to the spine between the shoulders, cold over the chest, and hot applications to the lower extremities, are measures to be employed in acute cases or cases in which hemorrhage is threatened. These measures are useful in connection with the movements, which should, of course, be employed in the intervals between the attacks, and then with very great care. Inhalation of vapor of turpentine by means of a steam inhaler is of great value in these cases.]

## I

1. Half-lying, stride-rolling.
2. Half-lying, foot-rolling.
3. Half-lying, lifting the hips with stroking.
4. Half-lying, bending and stretching of the lower arms, hands, and fingers.
5. Half-lying, knee-bending and stretching.
6. Sitting, trunk-rolling (gently).
7. Half-lying, transverse abdomen-stroking.
8. Reach-support-standing, sacrum-beating.

If the bleeding stops and the patient improves, more vigorous movements may be used, but the vigor should be increased by degrees and with care.

## II

1. Half-lying, stride-rolling.
2. High-ride-sitting, trunk-rolling.
3. Half-lying, foot-rolling.
4. Sitting, bending and stretching of the lower arms, hands, and fingers.
5. Fan-forward-stoop-support-standing, back-raising with resistance upon the hands and loins.



6. Half-sitting, knee-bending and stretching.
7. Half-lying, chest-lifting with vibration.
8. Half-lying, foot-bending and stretching.
9. Stretch-support-standing, transverse abdomen-stroking.
10. Sitting, chest-lifting.

### III

1. Sitting, chest-lifting.
2. High-reach-support-standing, foot-bending and stretching.
3. Sitting, alternate-twisting.
4. Half-lying, leg-out-stretching.
5. High-ride-sitting, back-bending-backward.
6. Crook-half-lying, knees-parting and closing.
7. Fan-sitting, arm-rolling.
8. High-knee-stride-standing, alternate-twisting.
9. Reach-support-standing, neck-bending.
10. Stretch-support-standing, chest-clapping.

### 38. PULMONARY CONSUMPTION.

In giving the following movements, discrimination should be made between a tendency to the disease, the first stages of the disease, and later, its full development. If the object of the gymnastics is to treat a tendency to the disease, one should do everything possible to lessen this tendency. The tendency consists in a weak heart, small and sunken chest, and a weak development of the body. The object of the treatment is to lessen the work of the heart and to strengthen the body generally, and by these means to improve the nutrition.

[Too much must not be expected of the movements in this disease. Medicated atmospheres, nebulized solutions, and dietetic and climatic treatment are all-essential in combating this grave malady.]

### I

1. Stoop-stride-sitting, back-raising with resistance upon the shoulders and loins.
2. High-reach-support-standing, foot-bending and stretching.
3. High-knee-stride-standing, alternate-twisting.
4. Half lying, leg-out-stretching.
5. High-ride-sitting, back-bending-backward.
6. Fan-sitting, arm-rolling.

7. Reach-support-standing, neck-bending.
8. Stretch-support-standing, forward-dragging.
9. Stretch-support-standing, chest-clapping.

After each movement give standing, arms-extending outward and upward.

## II

1. Stretch-stoop-stride-sitting, back-raising with resistance upon the hands and loins.
2. Half-sitting, knee-bending and stretching.
3. Stretch-sitting, arm-rolling.
4. High-reach-support-standing, foot-bending.
5. Forward-lying, holding.
6. Half-stretch-high-knee-stride-twist-standing, forward-twisting.
7. Fan-stoop-stride-sitting, arms-extending forward.
8. Sit-lying, raising with knee-support.
9. Stoop-forward-fall-reach-support-standing, neck-bending.
10. Stretch-support-standing, chest-expanding.
11. Stretch-support-standing, chest-clapping.

In this field we find an important mission for gymnastics ; and, in connection with suitable hygienic surroundings, if the treatment is begun in time, movements will prove useful in counteracting even the most marked tendencies to consumption. However, the gymnastic treatment must be continued not only for one or two months, but for years.

### *Treatments for the Beginning of Consumption.*

To determine the real beginning of chronic consumption would be difficult. A chronic inflammation of the lungs, consisting of small inflammatory lesions, may arise without being accompanied by fever or anything which might awaken suspicion. If the appetite begins to diminish, the flesh to disappear, and the strength to be reduced, an examination will undoubtedly reveal an abnormally high bodily temperature and a solidification within the lungs.

Consumption is then still in its first stages, but considerable change has nevertheless taken place. Persons with a ten-

dency to consumption and those who live under unhygienic conditions should, during an attack of chronic bronchitis, never neglect to use those remedies which are suitable for preventing dangerous consequences. In the later stages of consumption, the chronic lung catarrh passes into catarrhal inflammation of the lungs, and this results in an infiltration, which, not being reabsorbed, produces tubercles.

## I

1. Rest-sitting, chest-lifting.
2. Half-lying, stride-rolling.
3. Fan-stoop-stride-sitting, back-raising with loins-resistance.
4. Fan-sitting, arm-rolling.
5. Half-lying, foot-bending and stretching.
6. Sitting, alternate-twisting.
7. Half-lying, knee-bending.
8. Fan-stoop-support-standing, back-raising with resistance upon the hands and loins.
9. Stretch-support-standing, chest-expanding.

## II

1. Fan-stoop-stride-sitting, back-raising with resistance upon the hands and loins.
2. High-reach-support-standing, foot-bending and stretching.
3. Stretch-sitting, arm-rolling.
4. High-ride-sitting, trunk-rolling.
5. Half-lying, leg-out-stretching.
6. High-ride-sitting, back-bending-backward.
7. Half-lying, legs-parting and closing.
8. Half-stretch-high-ride-sitting, side-bending.
9. Half-lying, leg-twisting outward and inward.
10. Stretch-support-standing, chest-clapping.

After each movement give arms-extending outward and upward.

It is necessary that the patient should be surrounded with the best possible hygienic conditions. In connection with these, gymnastics generally attain good results.

*Treatments for Chronic Consumption and Tuberculosis.*

## I

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. Half-lying, bending and stretching of the lower arms, hands, and fingers.
4. Half-lying, stride-rolling.
5. Half-lying, chest-lifting with vibration.
6. Half-lying, foot-bending and stretching.
7. Half-lying, nerve-pressure of the legs.
8. Reach-support-standing, spinal-column-hacking.

If the strength of the patient increases during treatment, more vigorous movements are accordingly used.

## II

1. Reach-support-standing, spinal-column-hacking.
2. Half-lying, foot-rolling.
3. Half-lying, hips-lifting with stroking.
4. Half-lying, stride-rolling.
5. Half-lying, hand-rolling with bending and stretching.
6. Half-lying, nerve-pressure of the legs.
7. Half-lying, foot-bending and stretching.
8. Reach-support-standing, spinal-column-hacking.

In cases of raising blood with coughing, or tendency thereto, all movements of the chest should be avoided, even passive movements, for they might easily excite the coughing. Movements may, if they are used with great care, lessen the suffering of the patient, even though the disease has developed to such a degree that a return to health is impossible.

## 39. PLEURISY.

The following movements are adapted to remedy a condition in which there is adhesion of the walls of the right pleura, and a sunken condition of the right side of the chest.

[Fomentations over the affected parts, wearing of wet compress at night and dry packs during the day, are of great value after the subsidence of acute pain; vigorous percussion over the affected side is a useful means of overcoming the adhesion.]

## I

1. Sitting, chest-lifting.
2. High-ride-sitting, trunk-rolling.
3. Half-lying, foot-bending and stretching.
4. Stretch-sitting, arm-rolling.
5. Right-stretch-support-standing, chest and side-clapping to the right side.
6. Rest-high-ride-sitting, alternate-twisting.
7. Stretch-support-standing, forward-dragging.
8. See No. 5.

After each movement give standing, arms-extending.

## II

1. Stretch-stoop-stride-sitting, back-raising with resistance upon shoulders and loins.
2. Rest-high-knee-stride-sitting, alternate-twisting.
3. Stretch-support-standing, leg-inward-pressing.
4. Stretch-lying, arm-bending and stretching.
5. Stretch-bow-low-knee-stride-standing, alternate-twisting.
6. High-reach-support-standing, leg-backward-dragging.
7. Stretch-stoop-stride-sitting, alternate-twisting.
8. Fan-stoop-support-standing, back-raising with loins-resistance.
9. Right-stretch-support-right-bow-standing, chest and side-clapping of the right side.
10. Stretch-support-standing, forward-dragging.

In attempting to expand the sunken side or to aid the absorption of the exudate by the use of movements, great care is demanded, in the beginning, not to induce further inflammation. After the movements have been used for some time, the soreness will decrease, and the movements can then be gradually increased in vigor.

## 40. CRAMP OF THE ŒSOPHAGUS.

1. Reach-support-standing, spinal-column-hacking.
2. Crook-half-lying, point-vibration of the epigastrium.
3. High-ride-twist-sitting, trunk-rolling with abdomen and loins-resistance.
4. Half-sitting, knee-bending and stretching.
5. Pressure of the vagus nerve.

6. Stretch-sitting, arm-rolling.
7. Reach-support-standing, neck-bending.
8. High-reach-support-standing, foot-bending and stretching.
9. Crook-half-lying, pelvis-pressing.
10. Reach-support-standing, sacrum-beating.
11. Half-lying, chest-lifting with vibration.

#### 41. CHRONIC STOMACH CATARRH.

It must here be noted that a suitable diet is the most important treatment for this disease, and without the aid of this, gymnastic treatment is useless.

[Lavage, or stomach washing, administered with great care, is an essential method in these cases as a means of removing the cause of the disease. Examination of the stomach fluid should not be neglected. The treatment recommended for megrim will be found of great service.]

#### I

1. Reach-support-standing, knee-bending with abdomen and loins-resistance.
2. Crook-half-lying, vibration under the left ribs.
3. High-knee-stride-standing, backward-dragging with knee-support to the loins.
4. Half-sitting, knee-bending and stretching.
5. Lax-stoop-standing, abdomen-kneading.
6. High-knee-stride-standing, alternate twisting.
7. See No. 2.
8. Reach-support-stoop-support-standing, back-raising.
9. Stretch-sitting, arm-bending with knee-stroking to the back.

#### II

1. Reach-support-swing-standing, knee-bending with abdomen and loins-resistance.
2. High-reach-support-standing, leg-backward-dragging.
3. Crook-half-lying, vibration under the left ribs.
4. Sit-lying, raising with knee-support.
5. Lax-sitting, side-shaking.
6. Half-lying, leg-out-stretching.
7. Half-stretch-high-knee-stride-twist-standing, forward-twisting.
8. Stoop-support-standing, alternate-twisting.
9. See No. 3.
10. Stretch-stoop-stride-sitting, arm-bending and stretching.
11. Heave-support-standing, hips-alternate-twisting.

## III

1. Stretch-stride-support-standing, arm-downward-pressing.
2. Half-stretch-high-ride-sitting, bow-twisting.
3. Half-sitting, knee-bending and stretching.
4. Lying, half-raising with abdomen and loins-resistance.
5. Leg-forward-lying, arm-bending and stretching.
6. Crook-half-lying, vibration under the left ribs.
7. Stretch-support-half-crook-standing, knee-downward-pressing.
8. Reach-support-standing, sacrum-beating.
9. Stretch-support-standing, transverse abdomen-stroking.
10. Short-sitting, legs-parting and closing.
11. Stretch-support-bow-standing, hips-alternate-twisting.

## 42. DYSPEPSIA.

[In the treatment of dyspepsia, the regulation of the diet and the employment of proper medicines, together with the use of electricity and hydropathic remedies, are measures equally important with the movements. In severe cases, it is necessary that the patient should take a test breakfast and have a careful analysis made of the stomach fluid, before a proper prescription can be made. In cases in which there is great tenderness in the region of the stomach, applications over the stomach and such movements as produce pain should be avoided. In cases of dilatation of the stomach, a very common condition in dyspepsia, massage of the stomach is often necessary. For directions, see "Art of Massage," Modern Medicine Pub. Co., Battle Creek, Mich. Examination of the stomach fluid should be made in all severe cases, and lavage should be employed when necessary.]

## I

1. Reach support-standing, spinal-column-hacking.
2. Lax-stop-standing, abdomen-kneading.
3. High-reach-support-standing, leg-backward-dragging.
4. Crook-half-lying, vibration under the left ribs.
5. Sitting, alternate-twisting.
6. See No. 4.
7. Half-kick-half-lying, leg-downward-pressing.
8. Half-stretch-high-ride-sitting, side-bending.
9. Half-lying, leg-out-stretching.
10. Stretch-sitting, arm-bending with knee-support to the back.

## II

1. Half-stretch-reach-support-standing, forward-twisting.
2. Stretch-support-half-crook-standing, leg-downward-pressing.
3. Crook-half-lying, vibration under the left ribs.



4. Sit-lying, raising with knee-support.
5. Half-sitting, knee-bending and stretching.
6. Reach-support-fall-high-knee-standing, back-raising with loins-resistance.
7. Stretch-sitting, arm-rolling.
8. Half-stretch-side-step-standing, side-bending.
9. Crook-half-lying, abdomen-kneading.
10. Heave-support-standing, hips-alternate-twisting.
11. Reach-support-standing, spinal-column-hacking.

#### 43. CHRONIC ULCERATION OF THE STOMACH.

All movements and initial positions which have an effect upon the stomach must be avoided.

[In these cases, regulation of the diet, and in some instances, the employment of lavage, are essential to a radical cure.]

##### I

1. Fan-sitting, arm-rolling.
2. Half-lying, foot-rolling.
3. Half-lying, nerve-pressure of the legs.
4. Half-lying, knee-bending and stretching.
5. Fan-sitting, nerve-pressure of the arms.
6. Reach-support-standing, head-bending-backward.
7. Crook-half-lying, knees-parting and closing.
8. Reach-support-standing, spinal-column-hacking.

##### II

1. Reach-support-standing, spinal-column-hacking.
2. Half-lying, foot-bending and stretching.
3. Stretch-sitting, arm-rolling.
4. Half-lying, legs-parting and closing.
5. Reach-support-standing, neck-bending.
6. Half-lying, leg-outward-stretching.
7. High-ride-sitting, back-bending-backward.
8. Stretch-sitting, arm-bending and stretching.
9. Stretch-support-standing, chest-clapping.

#### 44. INTESTINAL CATARRH.

The object of gymnastic treatment is to lessen both the hyperæmia of the mucous membrane and the peristaltic movements.

[Regulation of the diet and suitable hydropathic measures are as essential as the movements, in cases of this sort.]

1. Stoop-stride-sitting, screw-twisting.
2. Half-lying, foot-rolling.
3. Crook-half-lying, vibration of the abdomen.
4. Half-lying, knee-bending and stretching.
5. See No. 1.
6. Stretch-sitting, arm-rolling.
7. See No. 3.
8. High-ride-sitting, trunk-rolling.
9. Half-lying, foot-twisting outward and inward.
10. Sitting, alternate-twisting.
11. Reach-support-standing, spinal-column-hacking.

This treatment has proved effective in chronic intestinal catarrh. Some of the milder movements should be taken two or three times a day. Diarrhœa caused by severe intestinal ulcers, dysentery, or cholera, do not, of course, come under gymnastic treatment.

#### 45. CONSTIPATION.

Here special movements are used, but as soon as an improvement is noticed, these special movements should be discarded, and in their place, movements of a more general strengthening nature should be used.

[Regulation of diet, employment of hydropathic measures, and in many instances the local use of electricity and other remedies, are essential to success in this condition.]

##### I

1. Reach-support-standing, knee-bending with abdomen and loins-resistance.
2. High-reach-support-standing, leg-backward-dragging.
3. Lying, half-raising with abdomen and loins-resistance.
4. High-knee-stride-standing, alternate-twisting.
5. High-ride-sitting, trunk-rolling with abdomen and loins-resistance.
6. Reach-support-standing, sacrum-beating.
7. Stretch-support-standing, transverse abdomen-stroking.
8. Stretch-sitting, arm-bending with back-support.

## II

1. Half-stretch-reach-support-swing-standing, knee-bending with abdomen and loins-resistance.
2. Sit-lying, raising with knee-support.
3. Lax-sitting, side-vibration.
4. Half-stretch-high-ride-sitting, bow-twisting.
5. Stretch-support-half-crook-standing, knee-downward-pressing.
6. High-ride-twist-sitting, circular-twisting with abdomen and loins-pressure.
7. Crook-half-lying, pelvis-pressing.
8. Stretch-support-standing, transverse abdomen-stroking.
9. Heave-support-standing, hips-alternate-twisting.
10. Stretch-support-standing, chest-expanding.

## III

1. Half-stretch-stride-support-twist-standing, forward-twisting.
2. Half-sitting, knee-bending and stretching.
3. Half-stretch-side-step-standing, side-bending.
4. Reach-support-fall-high-knee-standing, back-raising with loins-resistance.
5. Half-stretch-high-ride-twist-standing, forward-twisting.
6. Stretch-support-side-bow-standing, leg-inward-pressing.
7. Think-whole-stride-sitting, backward-dragging.
8. Swim-hanging, sacrum-beating.
9. Stretch-standing, arm-bending and stretching.
10. Reach-support-standing, spinal-column-hacking.

The last treatment is intended especially for general effect.

## 46. HÆMORRHOIDS.

In order to decide what movements to use, it is important to understand the cause of the disease. If the cause lies in the organs of digestion, in the lungs, or in the heart, it should be removed as far as possible, by the use of suitable movements. The movements must have a derivative effect upon the diseased parts, and remove all possible obstruction in the circulation.

[In severe cases, a surgical operation is essential for relief. Movements calculated to secure proper activity of the bowels and to improve the border sacs, are the best means of preventing a return of the disorder.]

## I

1. Reach-support-swing-standing, knee-bending with abdomen and loins-resistance.
2. Reach-support-standing, sacrum-beating.
3. Crook-half-lying, knees-parting and closing.
4. Half-stretch-high-knee-stride-standing, forward-twisting.
5. Half-lying, foot-bending and stretchng.
6. Lying, half-raising with abdomen and loins-resistance.
7. Reach-support-stoop-support-standing, back-raising with sacrum-beating.
8. Stretch-support-standing, transverse abdomen-stroking.
9. Short-sitting, leg-upward-dragging.
10. Stretch-sitting, arm-rolling.
11. Stretch-support-standing, chest-expanding.

## II

1. Half-stretch-swing-standing, knee-bending with abdomen and loins-resistance (right arm with left leg, and *vice versa* ).
2. Swim-hanging, legs-parting with sacrum-beating.
3. Half-lying, stride-rolling.
4. High-ride-twist-sitting, circular-twisting with abdomen and loins-resistance.
5. Stretch-lying, bending and stretching of the arms and legs.
6. Reach-support-fall-high-knee-standing, back-raising with loins-resistance.
7. Reach-support-standing, stroking of the sphincter.
8. High-reach-support-standing, foot-bending and stretching.
9. Reach-support-stoop-standing, sacrum-beating.
10. Crook-half-lying, knees-parting and closing.
11. Stretch-sitting, arm-bending with knee-support to the back.

## 47. PROLAPSUS ANI.

This disease occurs frequently in children, and also in older persons. It is not difficult to treat with movements, provided it is caused by flaccidity of the muscles, and is not accompanied by any tissue change or deformity.

[The knee-chest, or genito-pectoral, position is one of the best means of immediate relief in cases of this sort. This position also affords the greatest aid in the replacement of prolapsed bowel. Breathing movements executed while maintaining the chest position, taking pains to draw in the abdominal muscles and expand the chest as far as possible, are beneficial in this class of cases.]

1. Crook-half-lying, replacing the bowel.\*
2. Swim-hanging, sacrum-beating.
3. Hanging, legs-parting and closing.
4. See No. 1.
5. Rest-high-knee-stride-standing, alternate-twisting.
6. Reach-support-standing, stroking of the sphincter.
7. See No. 1.
8. Reach-support-standing, spinal-column-hacking.

#### 48. COLIC.

[Large, hot enemas or fomentations to the bowels are of the greatest service in relieving acute attacks of colic. Regulation of the diet and moist bandages worn at night are serviceable in preventing a return of the disease.]

1. Reach-support-swing-standing, knee-bending with abdomen and loins-resistance.
2. Lax-stoop-standing, abdomen-kneading.
3. Lying, hips-rolling.
4. High-ride-twist-sitting, trunk-rolling with abdomen and loins-resistance.
5. High-knee-stride-standing, screw-twisting.
6. See No. 2.
7. Half-stretch-high-ride-sitting, bow-twisting.
8. Crook-half-lying, epigastrium-pressing.
9. Crook-half-lying, abdomen-kneading.
10. Reach-support-standing, spinal-column-hacking.

#### 49. HYPERÆMIA OF THE LIVER.

[Regulation of the diet, fomentations over the region of the liver, moist compresses worn over the liver and on the bowels during the night, are important measures to be employed in connection with the movements.]

#### I

1. Standing, chest-lifting.
2. Half-lying, foot-rolling.
3. Sitting, trunk-rolling.
4. Stretch-sitting, arm-rolling.
5. Half-lying, stride-rolling.
6. Half-lying, chest-lifting with vibration.
7. Half-lying, leg-out-stretching.
8. Crook-half-lying, abdomen-kneading.
9. Reach-support-standing, spinal-column-hacking.

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\* The attendant stands at the right side of the patient and presses his finger-tips deep into the iliac fossa, and then lifts up.

## II

1. Stoop-stride-sitting, back-raising with shoulders and loins-resistance.
2. Crook-half lying, knees-parting and closing.
3. High-ride-sitting, circular-twisting with abdomen and loins-resistance.
4. High-reach-support-standing, foot-bending and stretching.
5. Crook-half-lying, vibration under the left ribs.
6. Half-stretch-side-step-standing, side-bending.
7. Half-sitting, knee-bending and stretching.
8. Lax-sitting, side-vibration.
9. Stretch-sitting, arm-rolling.
10. Stretch-support-standing, hips-alternate-twisting.
11. Stretch-sitting, chest-expanding.

## III

1. Stretch-stoop-stride-sitting, back-raising with shoulders and loins-resistance.
2. Half-stretch-high-knee-stride-stoop-standing, forward-twisting.
3. Half-sitting, knee-bending and stretching.
4. Reach-support-stoop-support-standing, back-raising.
5. High-ride-twist-sitting, circular-twisting.
6. Half-lying, legs-parting and closing.
7. Half-stretch-high-ride-twist-sitting, side-bending.
8. Reach-support-standing, neck-bending.
9. Stretch-sitting, arm-bending with knee-support to the back.
10. Stretch-support-standing, chest-expanding.

## 50. BRIGHT'S DISEASE.

The main object of gymnastic treatment in this disease is to improve the nutrition.

[Great care must be taken to avoid excessive fatigue in cases of this sort. Regulation of the diet, and measures to secure great activity of the skin, together with great care in the regulation of the clothing, are essential measures.]

## I

1. Sitting, chest-lifting.
2. Half-lying, stride-rolling.
3. Crook-half-lying, vibration under the left ribs.
4. High-ride-sitting, trunk-rolling.
5. Half-lying, foot-rolling.

6. High-ride-sitting, back-bending-backward.
7. Fan-sitting, arm-rolling.
8. Reach-support-standing, spinal-column-hacking.

## II

1. Reach-support-standing, spinal-column-hacking.
2. Half-lying, leg-out-stretching.
3. High-ride-twist-sitting, trunk-rolling.
4. Stretch-sitting, arm-rolling.
5. Reach-support-fall-high-knee-stride-standing, back-raising with loins-resistance.
6. Reach-support-standing, sacrum-beating.
7. Half-lying, leg-upward-dragging.
8. Stretch-support-standing, abdomen-stroking.
9. Crook-half-lying, knees-parting and closing.
10. Stretch-support-standing, forward-dragging.

### 51. DISPLACEMENT OF THE KIDNEYS.

As flaccidity of the abdominal muscles is the essential cause of the abnormal position, it is evident that the object of the movements must be to strengthen and develop the muscles, and to build up the general health. The kidney should be placed in the normal position before the movements are given.

[The knee-chest position, with breathing and forcible contraction of the abdominal muscles, and replacement of the kidney by the hand simultaneously, is a measure of great value in these cases. Abdominal massage and applications of electricity in such a manner as to cause strong contraction of the abdominal muscles, should also be employed. An abdominal bandage should be worn in severe cases.]

## I

1. Rest-stride-support-standing, backward-dragging.
2. Half-kick-half-lying, leg-downward-pressing with abdomen-pressing.
3. High-knee-stride-standing, alternate-twisting with abdomen-pressing.
4. Rest-walk-side-support-standing, side-bending.
5. Stretch-support-high-standing, leg-inward-pressing.
6. Stretch-support-standing, hips-alternate-twisting with abdomen-pressing.
7. High-reach-support-standing, foot-bending and stretching.
8. Stretch-support-standing, arm-downward-pressing.
9. Reach-support-standing, spinal-column-hacking.



## II

1. Reach-support-bow-standing, raising with interscapular and axillary resistance.
2. High-reach-support-standing, leg-backward-dragging.
3. Stretch-low-knee-stride-standing, alternate-twisting.
4. Stretch-half-kick-lying, leg-downward-pressing.
5. Stretch-lying, arm-bending and stretching.
6. Stretch-lying, leg-upward-extending.
7. Stride-standing, knee-bending with axillary, knee, and loins-resistance.
8. Stretch-support-standing, forward-dragging.

During the treatment the kidneys must be watched and kept in their normal position.

## 52. CHRONIC CATARRH OF THE BLADDER.

The movements should be derivative from the pelvis, and otherwise adapted to the relief of the patient.

[Sitz baths, regulation of the diet, bladder douches, and other appropriate measures, are essential to success in this condition.]

1. Half-stretch-stride-twist-support-standing, forward-twisting.
2. Reach-support-standing, sacrum-beating.
3. Half-lying, stride-rolling.
4. Stretch-lying, hips-rolling.
5. See No. 2.
6. Crook-half-lying, knees-parting and closing.
7. Reach-support-stoop-support-standing, back-raising.
8. Crook-half-lying, pelvis-pressing.
9. Stretch-sitting, arm-rolling.
10. Stretch-support-standing, hips-alternate-twisting.

## 53. INCONTINENCE OF URINE.

[The use of electricity and the removal of the causes of the complaint are measures not to be forgotten in treating this condition.]

1. Reach-support-standing, spinal-column-hacking.
2. Swim-hanging, legs-parting with sacrum-beating.
3. Forward-lying, holding.
4. Crook-half-lying, pelvis-pressing.
5. Stretch-lying, knee-upward-dragging.
6. Stretch-lying, hips-rolling.

7. Crook-stride-half-lying, perineum-vibration.
8. Reach-support-standing, sacrum-beating.
9. Crook-half-lying, knees-parting and closing.
10. Stretch-sitting, arm-bending and stretching.

#### 54. PARALYSIS OF THE BLADDER.

[The use of the catheter at proper intervals, the employment of electricity, and bladder washing when necessary, are essential measures in the treatment of these cases.]

1. Reach-support-standing, spinal-column-hacking.
2. Crook-half-lying, pelvis-pressing.
3. Crook-half-lying, knees-parting and closing.
4. Reach-support-standing, sacrum-beating.
5. Reach-support-stoop support-standing, back-raising.
6. High-knee-stride-standing, alternate-twisting.
7. Half-lying, leg-out-stretching.
8. Crook-half-lying, perineum-vibration.
9. See No. 4.
10. Stretch-support-standing, hips-alternate-twisting.
11. Stretch-sitting, arm-bending with knee-support to the back.

#### 55. CRAMP OF THE BLADDER.

[Sitz baths and other hydropathic measures must be employed in connection with movements.]

1. Reach-support-standing, spinal-column-hacking.
2. High-reach-support-standing, leg-inward-pressing.
3. Crook-half-lying, pelvis-pressing.
4. High-knee-stride-standing, screw-twisting.
5. Reach-support-standing, sacrum-beating.
6. High-ride-twist-sitting, circular-twisting.
7. Crook-half-lying, perineum-vibration.
8. Stretch-support-standing, hips-alternate-twisting.
9. See No. 3.
10. Half-lying, knee-bending and stretching.
11. Stretch-sitting, arm-bending with knee-support to the back.

#### 56. SPERMATORRHŒA.

The gymnastic treatment should improve the nutrition, and by this means strengthen the physical as well as the psychical powers.

[Sitz baths and local applications of electricity, and especially mental and moral treatment, are important in this class of cases.]

## I

1. Reach-support-standing, spinal-column-hacking.
2. High-reach-support-standing, foot-bending and stretching.
3. High-ride-sitting, back-bending-backward.
4. Fan-sitting, arm-rolling.
5. Crook-half-lying, vibration under the left ribs.
6. Half-lying, leg-out-stretching.
7. Reach-support-standing, sacrum-beating.
8. Stretch-support-standing, hips-alternate-twisting.
9. Stretch-support-standing, chest-expanding.

## II

1. Stretch-support-stride-standing, arm-downward-pressing.
2. High-knee-stride-standing, alternate-twisting.
3. Crook-half-lying, pelvis-pressing.
4. Reach-support-stoop-support-standing, back-raising.
5. Crook-half-lying, knees-parting and closing.
6. Crook-half-lying, vibration under the left ribs.
7. High-knee-stride-standing, backward-dragging with knee and loins-resistance.
8. Reach-support-standing, sacrum-beating.
9. Crook-half-lying, perineum-vibration.
10. Reach-support-standing, spinal-column-hacking.

## 57. AMENORRHŒA.

[Sitz baths, general applications of electricity, and in some cases pelvic massage, and other appropriate measures are essential.]

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. High-knee-stride-standing, screw-twisting.
4. High-ride-sitting, trunk-rolling.
5. Reach-support-standing, sacrum-beating.
6. See No. 3.
7. Fan-sitting, arm-rolling.
8. See No. 5.
9. Crook-half-lying, pelvis-pressing.
10. Reach-support-standing, spinal-column-hacking.

## 58. DYSMENORRŒA.

[Hydropathic, electrical, and in some cases surgical treatment are essential in addition to movements in these cases.]

## I

1. Stoop-stride-sitting, screw-twisting.
2. Reach-support-standing, sacrum-beating.
3. Crook-half-lying, pelvis-pressing.
4. High-knee-stride-standing, screw-twisting.
5. Stretch-lying, hips-rolling.
6. See No. 2.
7. Reach-support-fall-high-knee-standing, back-raising with loins-resistance.
8. See No. 3.
9. High-ride-twist-sitting, circular-twisting.
10. Stretch-support-standing, hips-alternate-twisting.
11. Reach-support-standing, spinal-column-hacking.

## II

1. High-knee-stride-standing, alternate-twisting.
2. Crook-half-lying, pelvis-pressing.
3. Half-lying, foot-rolling.
4. Reach-support-standing, sacrum-beating.
5. Reach-support-stoop-support-standing, back raising.
6. High-reach-support-standing, leg-backward-dragging.
7. Crook-half-lying, knees-parting and closing.
8. See No. 4.
9. See No. 2.
10. Reach-support-standing, spinal-column-hacking.

## 59. MENORRHAGIA.

In using gymnastics for this disease, it is important to understand the causes. If heart difficulty or lung trouble is the cause, that must determine the gymnastic treatment. Again, if the profuse flow is a result of uterine disease, such disease determines how far gymnastics should be used and the character of the movements. The principal object of gymnastics, in this as in a large number of other diseases, is to improve the nutrition and exert a derivative effect.

[In cases in which the menstrual flow is profuse, time should not be wasted in delay, if relief is not quickly obtained by the employment of

movements. In the majority of cases of this sort, vegetations of the lining membrane of the uterus are found, and relief is obtained only by their removal. Sometimes the hemorrhage is a symptom of polypi, or fibroid tumors, which may require relief by surgical means. Hydropathic and electrical measures are also essential in these cases.]

1. Sitting, chest-lifting.
2. Half-lying, foot-rolling.
3. Fan-sitting, arm-rolling.
4. High-ride-sitting, trunk-rolling.
5. Half-lying, stride-rolling.
6. Half-lying, knee-bending and stretching.
7. Reach-support-standing, neck-bending.
8. Stretch-half-lying, arm-bending and stretching.
9. Sitting, alternate-twisting.
10. Half-lying, foot-bending and stretching.
11. Reach-support-standing, spinal-column-hacking.

#### 60. LEUCORRHOEA.

[Careful local examination and proper local treatment must not be neglected in cases of this sort.]

1. Reach-support-standing, spinal-column-hacking.
2. Reach-support-standing, sacrum-beating.
3. Crook-half-lying, pelvis-pressing.
4. Half-lying, leg-inward-pressing.
5. Stretch-sitting, arm-rolling.
6. High-ride-twist-sitting, circular-twisting.
7. Half-lying, knee-bending and stretching.
8. Stoop-support-standing, raising with neck-resistance.
9. See No. 2.
10. See No. 3.
11. Stretch-support-standing, hips-alternate-twisting.
12. See No. 1.

#### 61. PROLAPSE OF THE UTERUS.

The object of the treatment is to replace the organ, and insure its remaining in place by improving the disturbed nutrition, and restoring the lessened tone of the parts. Movements which directly tend to this end are repeated several times at each treatment, and to improve the general health other movements in addition to these are used.

[In these cases there is usually not only prolapse of the uterus, but of the whole abdominal viscera. This subject is treated more at length elsewhere in this work. It is obvious that the cure of the prolapse of the uterus cannot be effected without relief of the general prolapse of the viscera. Applications of electricity to the abdominal muscles, and special massage to the abdominal and pelvic muscles, are essential in the treatment in many cases. Directions for pelvic and abdominal massage will be found elsewhere in this work. Surgical measures are necessary in some instances.]

1. Sitting, chest-lifting.
2. Reach-support-standing, sacrum-beating.
3. Crook-half-lying, replacing of uterus.\*
4. High-knee-stride-standing, alternate-twisting.
5. See No. 3.
6. Half-fan-sitting, kneading of the arm muscles.
7. See No. 2.
8. Half-lying, kneading of the leg muscles.
9. See No. 3.
10. Reach-support-standing, spinal-column-hacking.

## 62. POTT'S DISEASE.

If gymnastics are prescribed for this disease, it should be remembered that nothing can or ought to be done with reference to the deformity. It is important to know whether the inflammatory process has been wholly arrested, or whether it is still to some extent in progress. Otherwise the most gentle movements may increase the evil or cause a new inflammation. It is therefore necessary to begin with gymnastics only after the disease has been removed, and to use only movements of the arms and legs in the beginning. When there is no danger of injuring the spine, trunk movements which will relieve the respiration and circulation should be used, since the deformity causes a greater or less obstruction of these processes. The object of the treatment should be to improve the general health.

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\* The attendant, standing in front of the patient, with hands turned outward and a little separated, presses the finger tips slowly into the true pelvis just above and close to the pubis, and then presses or lifts up. If the uterus is prolapsed out of the vagina, it is replaced before giving the treatment. It is often not difficult in this manner to grasp the uterus or the uterus and surrounding structures through the wall of the pelvis.

1. Sitting, chest-lifting.
2. Half-lying, foot-bending and stretching.
3. Sitting, head-twisting.
4. Fan-sitting, arm-rolling.
5. Sitting, alternate-twisting.
6. Half-lying, leg-out-stretching.
7. High-ride-twist-sitting, circular-twisting.
8. Sitting, bending and stretching of the lower arms, hands, and fingers.
9. See No. 1.

### 63. CYPHOSIS.

Cases of cyphosis may be improved, especially in the young, by appropriate gymnastics. In cases of a considerable degree of cyphosis, an increased counter-curvature of the lower spine arises. In gymnastic treatment, it is important to see that, while the movements have a beneficial effect upon the cyphosis, they do not increase this counter-curvature. By means of suitable initial positions, this may be avoided.

[This condition is generally the result of improper position in standing and sitting. The rocking-chair is a prolific cause of this disease, which is exceedingly common among elderly people, and is not infrequently observed among younger persons. Posterior curvature of the spine is perhaps the most frequent form of spinal curvature. Corset wearing is a common cause of this condition in women. I have found suspension by the head and shoulders, the use of chest weights with the quarter circle, and applications of electricity, to be of great value in the treatment of this condition.]

1. Stretch-lying, arm-bending and stretching.
2. Sit-lying, raising with knee-support.
3. Fan-fall-sitting, arms-extending upward.
4. Reach-support-standing, neck-bending.
5. Fan-lying, leg-out-stretching.
6. Rest-high-knee-stride-standing, alternate-twisting.
7. See No. 2.
8. See No. 3.
9. Stretch-support-standing, hips-alternate-twisting.
10. Standing, arm-extending outward and upward, with chest-clapping.

### 64. LORDOSIS.

This condition, commonly termed saddle-back, is caused by paralysis of the dorsal muscles. It is rare. Those cases which can be cited through personal experience, have presented a curvature



in the region of the lumbar and the lower dorsal vertebræ. The gymnastics should be directed principally to the abdominal muscles, in order to affect the curvature of the lumbar region.

[The remarks made in relation to cyphosis apply also to this.]

1. Stretch-crook-half-lying, arm-bending and stretching.
2. Stretch-fall-stride-sitting, alternate-twisting.
3. Sit-lying, raising with knee-support.
4. Stretch-support-lying, leg-extending-upward.
5. Lying, drawing up the pelvis. \*
6. Stretch-lying, knee-upward-dragging.
7. Short-sitting, leg-upward-dragging.
8. High-ride-fall-twist-sitting, forward-twisting.
9. See No. 4.
10. Standing, arm-extending outward and upward.

## 65. SKOLIOSIS.

[In this disease a cure can be effected only when the patient can, by proper direction, put himself in a correct position, or when he can accomplish this by such assistance as can be given by the aid of the physician or attendant. Curvatures which have become rigid are incurable, and may increase in spite of all that can be done, without the employment of the proper apparatus to support the weight of the upper portion of the trunk. It is of the greatest importance that these cases should be taken in hand at the earliest possible stage. The treatment must generally be continued for a long period. Jackets, braces, etc., should generally be discarded, except in cases which are so far advanced as to be incurable. In such cases they may be employed as a means of relief, and to prevent increase of the curvature.]

### *a. Single Lateral Curvature (to left side).†*

#### I

1. Stoop-support-standing, arms-extending-upward with support to the left side.
2. Rest-standing, bending to the left side with support to the same side.
3. Hanging, neck-bending.

---

\* The patient draws up the pelvis by means of the abdominal muscles.

† If the right shoulder is lower, a common occurrence in this form of scoliosis, the right hand only is placed in the rest position. The side-support or pressure is made on the prominence of the curve. All the movements have a like effect in that they straighten the back and develop and strengthen the extended muscles.

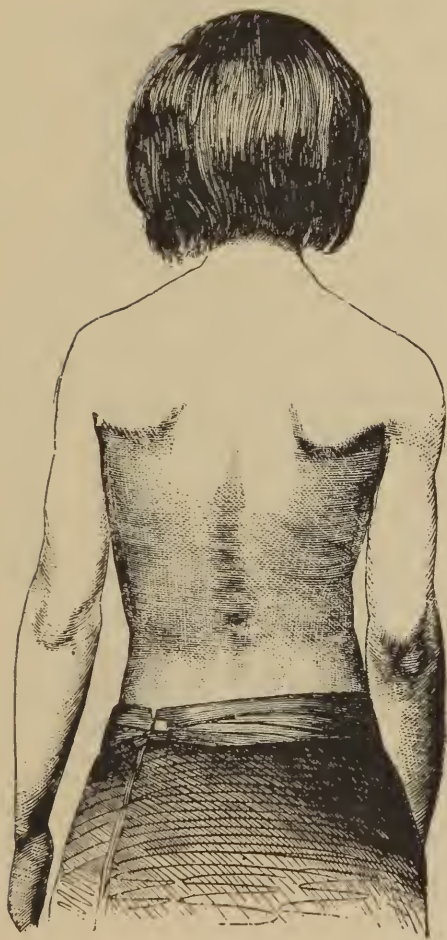


Fig. 92.



Fig. 93.

4. Right-side-lying, holding.
5. Rest-standing, raising on toes with support to the left side.
6. See No. 2.
7. Hanging, legs-parting with support to the left side.
8. See No. 4.
9. See No. 2.
10. See No. 4.

After each movement give standing, arms-extending.

## II

1. Stoop-support-standing, right-arm-extending-upward with support to the right side.
2. Right-rest-right-hip-support-standing, bending to the left side with support to the same side.
3. Rest-standing, raising on toes.
4. Right-stretch-right-side-lying, holding.
5. Right-stretch-lying, pressing the left hip upward.
6. Right-rest-standing, bending to the left side with support to the same side.
7. See No. 5.
8. See No. 4.
9. See No. 2.

After each movement give standing, arm-swinging forward and upward.

### *b. Double Lateral Curvature.*

1. Stoop-support-standing, left-arm-extending upward, double pressure.
2. Left-rest-stoop-support-standing, back-raising, double pressure.
3. Hanging, neck-bending, double pressure.
4. Left-rest-stoop-stride-sitting, back-raising, double pressure.
5. Hanging, legs-parting.
6. See No. 4.
7. Left-stretch-right-side-lying, stretch-holding. \*
8. See No. 2.
9. See No. 4.
10. See No. 7.

After each movement give standing, arms-extending.

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\* This is a movement of powerful effect, and must be taken and given with much attention.

### 66. MUSCULAR INFLAMMATION.

The movements have a very different effect upon different individuals, caused, it appears, partly by the physical condition of the person, and partly by the character of the disease. The treatment should not be limited to local parts, but should embrace a general effect upon the respiration, circulation, etc.

[Fomentations and moist compresses applied to the affected parts will be found of greater utility than the movements in the earlier stages, and may be used in connection with them in the later stages.]

1. Sitting, chest-lifting.
2. Muscle-kneading (local).
3. Half-lying, stride-rolling.
4. Muscle-fulling (local).
5. Stretch-sitting, arm-rolling.
6. Beating of the muscles.
7. Half-lying, leg-out-stretching.
8. See No. 2.
9. Rest-high-knee-stride-standing, alternate-twisting.
10. Reach-support-standing, spinal-column-hacking.

Local treatment should be applied to the diseased part, and consists of kneading, fulling, and beating.

The general treatment is modified according to individual conditions.

### 67. RHEUMATISM.

By considering the cause of the disease, it appears evident that change of diet and gymnastics ought to be powerful agents in mitigating the disease or preventing relapse. The object should be to promote general muscular activity, and to exert a vigorous influence upon the nutritive organs.

[It should be remembered that in this disease, the real malady is not located in the joint, but is a disorder of nutrition, in which the stomach is perhaps primarily at fault. Bouchard called attention several years ago to the fact that dilatation of the stomach is a very common condition in cases of rheumatism; and my observation in a large number of cases has fully confirmed the statement. Regulation of the diet and the employment



Fig. 94.



Fig. 95.



of hydropathic measures, with eliminative baths, are of the greatest importance in the treatment of these cases. The diet should be confined to fruits, grains, easily digested vegetables, and milk in moderate quantities.]

## I

1. Reach-support-standing, knee-bending with abdomen and loins-resistance.
2. High-knee-stride-standing, backward-dragging with knee-support to the loins.
3. Half-lying, stride-rolling.
4. High-ride-twist-sitting, circular-twisting with abdomen and loins-resistance.
5. Stretch-sitting, arm-rolling.
6. High-reach-support-standing, foot-bending and stretching.
7. Reach-support-stoop-support-standing, back-raising.
8. Reach-support-standing, sacrum-beating.
9. Stretch-support-standing, transverse abdomen-stroking.
10. Stretch-support-standing, chest-expanding.

## II

1. Reach-support-swing-standing, knee-bending with abdomen and loins-resistance.
2. High-reach-support-standing, leg-backward-dragging.
3. High-ride-twist-forward-fall-sitting, forward-twisting.
4. Sitting, knee-bending and stretching.
5. Reach-support-stoop-stride-sitting, back-raising in different planes.
6. Stretch-support-half-crook-standing, knee-downward-pressing.
7. Stretch-stoop-stride-sitting, arm-bending and stretching.
8. Stretch-support-standing, hips-alternate-twisting.
9. Half-lying, legs-parting and closing.
10. Reach-support-standing, sacrum-beating.
11. Stretch-sitting, chest-expanding.

**68. PROGRESSIVE MUSCULAR ATROPHY.**

If the atrophy has confined itself to a few groups of muscles, a trial of gymnastics and electricity is indicated. If only certain muscle bundles have undergone fatty degeneration, while others of the same muscles remain sound, suitable gymnastics will strengthen the latter and may even aid in developing new fibers. But if the atrophic changes are far advanced,

no improvement of the muscles can be accomplished by gymnastics.

[Electricity and hydropathic measures should not be neglected in the treatment of these cases.]

The following prescription is for muscular atrophy of the right leg: —

1. Sitting, chest-lifting.
2. Half-lying, nerve-pressure of the right leg.
3. Stretch-sitting, arm-rolling.
4. Sitting, alternate-twisting.
5. Half-lying, knee-bending and stretching.
6. High-ride-sitting, back-bending-backward.
7. See No. 2.
8. Half-lying, right-leg-out-stretching.
9. High-ride-sitting, trunk-rolling.
10. Half-lying, foot-bending and stretching.
11. Half-lying, right-leg-upward-dragging.
12. Reach-support-standing, spinal-column hacking.

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